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Agriculture's Changing Horizon

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On the Horizon–New Technologies, Environmental Challenges, and Changing Consumer Expectations

This issue of *Agricultural Outlook* features excerpts from USDA's 69th Annual Agriculture Outlook Conference. Secretary of Agriculture Edward Madigan leads off, with the challenge to anticipate and plan for some of the more remarkable changes on agriculture's horizon—advances in biotechnology, new industrial uses for farm products, innovative and productive agricultural research, new trade rules complicated by a new world order, and sound farm policy that emphasizes incentives.

U.S. wheat producers are acutely aware of new challenges in marketing and production. Those challenges, according to the North Dakota Wheat Commission, will be colored by political uncertainties in two key markets—China and the former Soviet Union. Successful producers are increasingly aware of the national and international events that affect their competitiveness. They will become increasingly efficient, implementing future technologies and adapting products to remain competitive at home and abroad.

Blue Diamond Growers, a farmer-owned cooperative, cites success from its extensive involvement in marketing efforts, domestically and abroad. Blue Diamond's efforts to expand almond markets around the world, such as the development of a soy-flavored almond tailored to the Japanese market, have reaped rewards for California almond growers. Consumption of U.S. almonds worldwide has quadrupled over the last 20 years.

As the next century approaches, the most pressing issues facing agriculture include potential climate change, sustainability, and the implications of biotechnology. The potential for global warming has raised world interest in future weather and climate to a higher level of awareness. For agriculture, understanding regional climate pattern changes are of greatest importance. But available models cannot yet produce accurate estimates at the regional level, and conflicting results must be clarified before major policy actions are finalized.

Society's mandate for agriculture in the 21st century is to develop a food and fiber system that continues to be efficient and productive, but also ecologically sound. An agricultural economist at the University of Missouri points out that the new mandate will require a different perspective on the role of agricultural policy. The new policy perspective points to decoupling current commodity-based programs from their present objective of price stabilization and supply management, and recoupling them with the multiple objectives of agricultural sustainability—safeguarding the natural resources on which agriculture depends.

The articles in this issue are based on remarks at the Agriculture Outlook '93 Conference by non-USDA as well as USDA speakers. The contents present a diversity of viewpoints on agricultural issues and do not necessarily reflect the views of the Department.

By the turn of the century, today's new technologies may be integrated into the high-tech agricultural systems of tomorrow. The future is already taking shape. Since 1982, for example, a team of researchers at Calgene Fresh, Inc. has successfully applied the latest developments in genetic engineering, plant breeding, and farming to solve an age-old problem—how to supply an abundance of great-tasting tomatoes throughout the year. Calgene searched for the gene linked to the ripening and softening process in tomatoes, made a copy of the gene, and inserted it backwards into the tomato plant. Calgene's success with the FLAVR SAVR® tomato will likely depend on the ability to adapt its delivery system and growing techniques to guarantee significantly better taste all year long.

Biotechnology is developing within a larger context of consumer concerns about health and environmental problems. The outlook depends on whether consumers accept food produced through biotechnology as safe and beneficial, and whether they view biotechnology methods as ethically sound. According to a survey conducted by researchers at North Carolina State University, consumers show a wide range of knowledge and acceptance, depending on the application of biotechnology.

The U.S. food manufacturing industry has introduced some 35,000 new food products in each of the last 2 years. New technologies adopted by the industry include ways to replace fat in animal products with oat or other grain derivatives, methods of more effectively developing tasteful foods that can be microwaved, new forms of packaging, and continued improvements in the taste of all foods.

Each of the past five or six decades has called for adjustments in food and agriculture—the 1990's are no exception. If there has been one constant in U.S. food and agriculture, it has been change.

Agriculture's Changing Horizon

Edward Madigan
Secretary of Agriculture

At the Agriculture Outlook Conference 10 years ago, as at this year's conference, participants offered predictions about what lay ahead. How well did they anticipate the changes we were to see over the coming decade? Perhaps most intriguing are the changes that were not foreseen in 1982.

No one foresaw in 1982 that within 10 years the Cold War would be over and the Berlin Wall would fall . . . that Eastern Europe would be free . . . and that the Communist-dominated Soviet Union would be embracing market economics. Those events have had a profound impact on U.S. and world agriculture. What happens in that part of the world over the next few years will profoundly affect our lives in years to come. Perhaps nothing else will matter quite as much.

Neither did anyone foresee in 1980 that we would be enmeshed in a worldwide quest for new and fair rules of international trade in agriculture, with negotiations consuming more than half of the ensuing 10 years, and still not being completely resolved as we meet here today.

There was no inkling a decade ago that by now we would have a North American Free Trade Agreement—the most far-reaching trade pact ever on this continent, one that encompasses the largest total economic production and consumption pool in the world, and that holds out a brighter future for Canada, Mexico, and the U.S.

These are positive developments for agriculture and the nation.

In the proceedings of the Outlook Conference of a decade ago, I found no reference to such terms as ethanol fuels, commodity certificates, EEP, flex acres, sodbuster, swampbuster, alternative agriculture, and Alar. Nor did I find reference to the spotted owl, bST, the food pyramid, wetlands regulations, animal rights, global warming, and food labeling.

What this review tells us is that change—inevitable change—often follows courses and leads to events that we cannot foretell. As we look ahead today at the horizons of change for agriculture, let us be humbled by our experience—yet be bold in our expectations.

I think we can detect some winds of change that will blow with persistent and increased intensity in the years ahead. One enduring force for change is the search for new industrial uses for agricultural products, with the following goals:

- To increase demand for farm products, with resulting improvement in farm income, so that farmers can meet ever-increasing production costs and farm family living expenses;
- To substitute the use of renewable resources for decreasing supplies of nonrenewable resources; and
- To develop and harness more environmentally friendly resources in the drive for clean air, clear water, and a better environment.

Another enduring force for change is the search for fair rules of international trade:

- To increase farm exports where U.S. agriculture has a competitive advantage in the world, thus increasing farm income and boosting national economic activity;
- To stimulate world trade in agricultural and industrial commodities to offset the drag of static growth that now slows world economies; and
- To reduce the costs and the drain on nations and societies of unfair trade barriers and export subsidies.

American farmers should be given a chance to compete with foreign farmers—instead of having to compete with foreign treasuries or against capricious, protective, and wasteful foreign regulations.

The search for innovative and productive agricultural research must continue:

- Research is the well from which we draw to sustain economic life and improve the standard of living.
- Rigorous research is essential to remain competitive in world agriculture and not be weakened, swept aside, or overwhelmed by discoveries elsewhere.
- Research is needed to broaden the forms of trade merchandise to reach rapidly increasing populations in other lands, for their benefit and for ours; future population growth will be overwhelmingly outside our shores.

Also setting the stage for change is the search for sound farm programs based on incentives:

- Government should form a partnership with farmers in guiding desirable change—not be a policeman or a foreboding oppressor.
- Incentives are superior to regulations and controls, and get better results.

- Farmers and society can use incentives to share the cost and goals of piloting desirable agricultural activities—while protecting farmers' private property rights.

Another exciting force for change is the developing realm of biotechnology. The coming age of biotechnology in agriculture promises to make rapid and far-reaching progress that will dwarf the advances of the preceding age of agricultural mechanization and the harnessing of chemistry:

- Biotechnology is more environmentally friendly and is the best chance to create pest and disease resistance, reduce the use of chemicals and fertilizers, and enhance food safety.

- Biotechnology will speed advancement in quality and content of crops and livestock, surpassing the narrow boundaries and the snail's pace of crossbreeding and natural selection that have prevailed for the last 10,000 years.

We can stretch our seasons, now delineated by frost; we can cope better with drought and heat and salinity; and we can competitively serve a worldwide market with a cornucopia of treasures that since the beginning of time have been hidden among the gene messengers and nestled in the chromosomes of nature. AO

1992 Review & the Year Ahead

The 1993 outlook for U.S. agriculture calls for modest growth in the farm economy, with slightly higher cash farm income, a higher farm asset value, and a modest rise in debt, but with the debt/asset ratio holding at the healthier lower levels of recent years.

Cash farm income in 1993 could increase slightly, perhaps 1-2 percent from 1992's estimated $60 billion. However, uncertainty remains about the 1993 outlook, and net cash income could vary from $58 to $64 billion. Net farm income in 1993 could be down as much as 8 percent, perhaps falling to a range of $42 to $48 billion. The reason is a negative inventory adjustment, following sales of inventories carried over from record 1992 crops.

Net farm income for 1992 will be close to the 1990 record of $51 billion, well above earlier expectations because of larger commodity production and lower expenses. Also, the buildup in crop stocks is boosting 1992 net farm income, while sales from these stocks will add to net cash income in 1993.

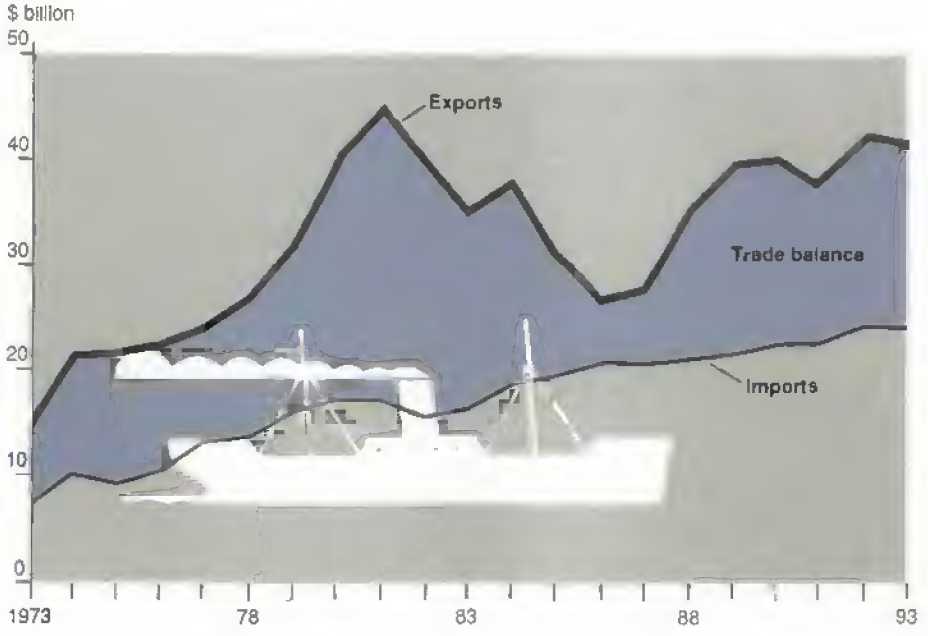
Total farm output for 1992 will be 5 percent above 1991, declining only slightly in 1993, as smaller crop production is nearly offset by higher animal product output. The large agricultural output, coupled with moderate increases in inflation and marketing costs, will hold increases in retail food prices to 2-4 percent. This would follow an increase of slightly over 1 percent expected for 1992, a year of declining meat prices, particularly for pork.

Large commodity output in 1993 will be matched by expanded markets—both at home and abroad. Domestic use of crops will be up 4 to 5 percent, led by an increase of more than 5 percent in feed use in response to expanded animal product output and generally lower feed prices. Crop food use and animal product demand will rise with population growth and continued economic recovery.

International demand for U.S. agricultural products will remain strong, in line with population growth and economic expansion in a number of countries, particularly East Asia and North Africa. The value of U.S. agricultural exports in fiscal 1993 is expected to total $41.5 billion, slightly below the 1992 level of $42.3 billion, but the third highest ever—the record is $43.8 billion in 1981. The value of exports of horticultural and animal products is forecast to exceed 1992 levels, while bulk commodity value will decline. Imports are likely to slip in fiscal year 1993, but the agricultural trade surplus will still decline one-half billion to $17.5 billion.

The longer term outlook is for agricultural exports to be a source of growth for farmers and the economy. The export growth is a response to stronger economic performance, especially in less

World Demand for U.S. Farm Products Remains Strong



Fiscal years. 1993 forecast.

Agricultural Economy

developed countries, and to reforms in farm and trade policies abroad.

Global Commodity Demand To Strengthen

World production of most crops is increasing in 1992/93. Favorable weather has upped potential output in a few major producing countries, including the U.S., the former Soviet Union (FSU), and India. Animal product output will reach a record as pork and poultry supplies continue to increase.

World commodity demand will be stronger in response to real economic growth of 2.5-3 percent, up from 1.5 percent estimated for 1992, and population growth continuing at about 1.7 percent. However, shorter supplies in some regions like Eastern Europe, or higher prices, will dampen growth in global consumption of grains. For the U.S., grain exports are up slightly, but restrained by continued large crop supplies in competing exporting or importing countries. These factors will also mean lower U.S. cotton exports, while U.S. exports of animal and horticultural products will continue to increase in 1992/93.

U.S. domestic demand for commodities will be stronger in 1992/93. The outlook reflects U.S. economic expansion of 2.5-3 percent, population growth of around 1 percent, and expansion in animal product output of 2.5-3 percent with 5-percent-greater use of grains and high-protein meals.

1993 & Beyond

U.S. crop production is up 9 percent in 1992, as favorable weather resulted in recovery to record or near-record yields for many crops. Acreage planted to major crops was up about 2 percent. Acreage taken out of production under government annual and long-term programs fell to around 54.5 million acres, down from 65 million in 1991. Wheat, corn, and sorghum acreage increased the most, with acreage reduction requirements lowered, and prices attractive at planting time.

For 1993, crop acreage is likely to show a slight reduction, as producers respond to lower feed grain and soybean prices next spring and to increased acreage reduction requirements for corn. However, acreage will likely increase for wheat due to a zero acreage reduction requirement.

U.S. 1992 yields are well above trend for several crops. Many crops suffered stress or actual losses from excess moisture, dryness, and freeze, but overall conditions turned out to be excellent for yields. Among the crops forecast to achieve record-high yields are corn, soybeans, durum and other spring wheat, sorghum, oats, barley, and potatoes.

If yields drop back to trend levels in 1993, they will be down for wheat, corn, soybeans, and cotton. A combination of lower yields or reduced acreage would suggest smaller crops in 1993, except cotton, with the very high abandonment of cotton acreage in Texas not expected to be repeated.

Demand for 1993 U.S. crops is likely to expand in response to further economic recovery around the world, continued large livestock feed requirements, and foreign population growth. U.S. stocks of corn and soybeans are likely to be reduced in 1993/94, while wheat and cotton will move up.

Later in the 1990's, world commodity consumption and trade are expected to respond to an easing of trade barriers and stronger economic growth. U.S. agricultural exports stand to gain, since U.S. producers and marketers are price competitive.

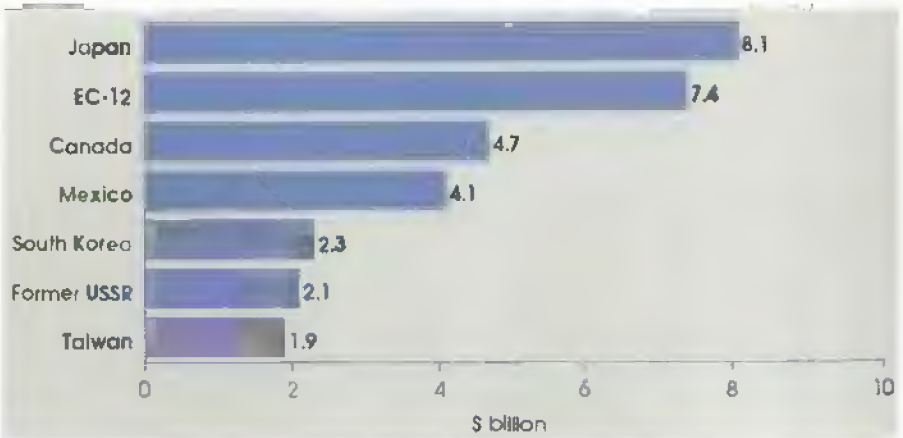
World Market Prospects

Trends in U.S. agricultural exports over the past two decades offer some insight into prospects for the future. The 1970's was a period of rapid and unsustainable growth in U.S. agricultural exports,which rose at an average annual rate of $1.4 billion, led by $0.8 billion in annual sales increases to industrial countries.

However, in the 1980's, U.S. exports to industrial, less developed, and formerly centrally planned economies stagnated. Significant increases can be found only by looking at smaller groupings, such as east Asia (Hong Kong, Singapore, South Korea, and Taiwan), where U.S. exports continued to grow. Among the industrialized countries, European nations increasingly subsidized their own agricultural production in the 1980's. They not only reduced their need for imports from the U.S. but also exported surpluses into world markets, displacing exports of the U.S. and other countries.

The less developed countries, particularly in Latin America, were hard hit by the recession in industrialized countries in the early 1980's. As their economies faltered, they could not afford imports. Only now is this situation turning

Japan and EC Are Top Customers for U.S. Ag Products



Fiscal 1993 forecast.

around. Countries whose economies were formerly centrally planned also were lacking in financial resources to buy in world markets during the 1980's, particularly Eastern Europe.

Two developments of the 1980's may shed light on U.S. export prospects. One is the expansion of shipments to east Asia, particularly the newly industrialized countries (NIC's), where economic growth was strong and imports rose. The second is an expansion in U.S. exports of some high-value products (those receiving some additional processing past the farm gate), particularly commodities whose production and trade were much less subsidized by government programs than bulk commodities.

U.S. exports to NIC's rose $140 million on average per year in the 1980's, spurred by annual economic growth of about 8.5 percent per year. New NIC's are likely in the 1990's, as economic growth in developing countries follows recent reforms of their agricultural production programs and the elimination of trade and capital market restrictions. Latin American countries, especially Mexico, appear to be good NIC candidates, and to be growing markets for U.S. products.

U.S. exports of high-value products rose $570 million per year on average in the 1980's, while bulk products dropped $930 million annually. Exports of some high-value products, particularly horticultural products, benefited from wholesale removal of trade restrictions by a number of countries in the 1980's. Growth is likely to continue in the 1990's, particularly as trade restrictions are lifted in additional countries and for other high-value items, such as animal products.

The experience of the last two decades suggests that U.S. exports of bulk products would benefit under freer trade. The 1990's should be a period of relatively strong growth in U.S. agricultural exports, with economic recovery around the world, and reform in farm and trade policies.

[James Donald, Chair, World Agricultural Outlook Board, USDA (202) 720-6030] AO

Agriculture: The Longer Term

In the next 10-12 years, U.S. agriculture is likely to confront three broad trends that germinated in the late 1980's. Studies pointing to these trends include work by USDA, the World Bank, the Organization for Economic Cooperation and Development (OECD), and the Food and Agricultural Policy Research Institute (FAPRI).

The first trend is toward a tighter balance between demand and the capacity to produce, reflecting faster growth in exports and industrial uses, and slower growth in input use and productivity. Second is the likely further government withdrawal from the sector, reducing the dependency of the sector on government as well as providing opportunities to be market responsive. Lastly, nominal gains—but real losses—in the sector's overall income and finance position are likely, bringing strong, competitive returns to efficient producers, but placing continued financial pressure on the less efficient.

A Changing Capacity To Produce

All studies depicting the trends for U.S. agriculture over the next decade or so agree that the sector begins the 1990's with considerably more capacity than needed to meet market demand. Moreover, trends in input use and in productivity will work to expand capacity over the next decade and a half. With natural resources committed to agriculture expected to remain relatively fixed, productivity will be the major source of growth in U.S. capacity.

However, productivity will not arise from growth in input use, which is expected to be negligible, but from improvements in input quality, better farm management, and the adoption of less input-intensive technologies. Productivity could increase in the trend range of 1.5 to 2 percent per year over the next decade.

USDA's analysis projects increases in productivity per year through 2005 that translate into yields of 41, 140, and 39 bushels per acre for wheat, corn, and soybeans compared with current trend levels of 38, 122, and 35 bushels. And if the farm sector's idled capacity (land retired under acreage reduction and conservation programs) were brought back into use, U.S. agriculture's capacity to produce could grow an additional 30-35 percent by 2005. Moreover, if other postwar trends in prices and returns hold, this increase in capacity would be consistent with slowly declining real commodity prices and constant to slowly declining real incomes.

What Drives Demand

All of the studies link demand for farm products in 2005 with developments in the domestic market for food, feed, fiber, and agriculture-based industrial products, as well as exports.

There is general agreement that domestic food, feed, and fiber demand will grow slowly, in tandem with population gains. Income growth and concern about food safety and nutrition will be important factors, but increasingly through shifts in product mixes. By 2005, domestic demand for food, feed, and fiber could be 25 percent higher than in 1990.

In the expanding market for industrial uses, public policy and market conditions are expected to combine to increase demand for cleaner sources of energy and cheaper raw materials from agriculture. Demand in this segment of the market could increase considerably by 2005, but from a small 1990 base.

Exports are the most difficult to project, but also the largest potential source of demand growth. All of the studies agree that the outlook for the world market generally, and U.S. exports in particular, depends on reviving growth in demand for farm products in food-deficit countries

and resolving trade disputes with the EC and other trade partners.

While far from bullish, the studies all project some improvement in foreign demand growth. They look for a gradual but marked improvement in the world economy, and increased economic activity in a widening circle of countries (such as Mexico) to raise food demand—in many cases faster than their domestic agricultures can meet. Sustained economic growth in the smaller circle of countries that prospered in the 1980's (such as Korea and Thailand), and further growth in reforming countries (such as China), are projected to reinforce the trend in demand growth.

While less dramatic, some slower growth in export availabilities of key suppliers like the EC is also part of the studies' export picture. This was originally linked to expectations that the burden of the price supports and export subsidies of the EC's Common Agricultural Policy would lead eventually to unilateral liberalization of Community agricultural and trade policy. A new GATT accord would lower existing internal supports and import restrictions, and head off future protectionism in countries that currently have little or no support in place.

With foreign domestic demand growth spilling over into the world market, world trade is expected to grow twice as fast over the late 1990's and early 2000's as in the 1980's. Stronger import demand and export supply adjustments as a result of trade reforms, combined with the unilateral liberalization provided for in the 1990 farm act, should improve the U.S. position with a substantial 40-percent increase in export volume by 2005. This compares with a near tripling of U.S. export volume in the 1970's but would be a dramatic advance over the 25-percent loss in export volume in the 1980's.

Policy & Excess Capacity

The composite picture of future domestic and export markets implies an increase of slightly more than 30 percent in total demand for U.S. farm products by 2005. Given the potential for expanded production on the order of 35-40 percent over this same period, that means possible excess production capacity of around 5-10 percent.

But excess capacity cannot exist over time in a market economy without policy intervention to slow or prevent resource adjustments. U.S. agricultural policy has worked over most of the postwar period to maintain resources in the sector by supporting commodity prices and producer incomes above market clearing levels. In the setting projected here, the extent to which the public is willing to continue intervening, and how support is structured, will determine whether market forces eliminate the imbalance or if the excess resources in question are held in the sector.

The studies that look ahead to a 10-year horizon for U.S. agriculture recognize the pivotal role policy will play in this environment, and all of the studies assumed a continuation of 1990 legislative policy. This policy environment keeps much of the traditional agricultural policy framework in place, and leads to gradual reductions in real price and income support levels and reduced real funding for trade and resource programs—continuing the trend of gradually moving government out of agriculture.

Less support for the sector through trade programs reflects expectations that export promotion programs will not be needed as much in the mid- and late 1990's if U.S. export growth picks up and if progress is made in reaching an export subsidy accord with competitors, particularly the EC. It also reflects less government intervention in general and concern about the federal budget.

Outlays for conservation programs are also projected to lag in nominal terms and to drop off sharply in real terms toward the end of the period, as the link between conservation programs and supply management weakens. By 2005, only 20 million acres might be idled. Given normal year-to-year swings in yields due to weather, the full U.S. acreage base could even be needed at times to offset a poor crop. And annual acreage reduction programs offer far more flexibility in meeting this temporary need than conservation programs that typically involve multi-year contracts, large startup costs, and ongoing rental payments.

Implications For Performance

Income-wise, with more product marketed as output increases and nominal prices rise, cash receipts increase steadily over the projection period. Continued, albeit declining, government payments help to boost farm income. With expenses rising somewhat more slowly than receipts, nominal net farm income also rises each year. However, the pace is significantly slower than inflation, so real income falls.

Financial indicators reflect these same market pressures. While appreciating in nominal terms, assets erode in real terms. Debt increases slowly in nominal terms and falls sharply in real terms as the market setting discourages capital investment. Equity rises in nominal terms, but even declining real debt is not enough to keep real equity levels from receding.

In short, with gradually eroding program support, agriculture faces significant market pressure, even though its capacity to produce and the market demand for its products are moving into closer balance than over most of the postwar period. But public support, while significantly lower, is still high enough to prevent the full adjustments that would bring the sector's output capacity into balance with market demand (in the form of lower prices and farm incomes). USDA and FAPRI budget projections still call for net transfers to the sector in the range of $3 billion, compared with $9 billion in 1990 and $26 billion in 1987.

Caveats

Long-term projections are of limited value, no matter how strong the consensus, without a sense of possible shocks to the system. All of the studies recognize weather as a critical uncertainty, but are forced to assume normal weather. The studies also point to two other sources of uncertainty—economic and environ-

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mental concerns about the sustainability of our technology base, and trade concerns about developments in Eastern Europe, the former Soviet Union, and the developing countries.

With the natural resources committed to agriculture relatively fixed both in the U.S. and abroad, future growth in supply will continue to depend heavily on productivity growth, linked in turn to heavy use of petroleum-based inputs. This raises two questions—one economic and the other environmental.

In economic terms, will the supply and price of petroleum continue to favor its expanding use in agricultural production? All four studies project rising real prices for petroleum. In ecological terms, how much stress will increased use of petroleum-based inputs place on the environment? These concerns could combine to make a petroleum-based agricultural technology increasingly obsolete.

In the best of worlds, these pressures would lead to more efficient use of the inputs in question and accelerated development and adoption of alternative technologies—some of which are already in motion in U.S. agriculture. In a less than ideal world, with the transition not as smooth as assumed in the four projection studies, growth in supply will be slower and environmental costs higher. Given the resource base of the U.S., and its lead in new technology development and adoption, the "bumpier" transition would actually work to expand export demand for U.S. products faster than projected here, would ease the excess capacity problem faster, and would position the sector to attract rather than lose resources early in the next century.

The gradually strengthening world market for farm products envisioned in all four studies could well fail to materialize, depending on how events in Eastern Europe and the former Soviet Union unfold. The studies are optimistic in projecting a slow, orderly reform effort in this bloc, leading to gradually reduced import demand and limited increases in export availabilities.

While less probable, more successful reform efforts in these countries—or possibly the total collapse of their economies—would have a far more bearish impact on the world market than projected, limiting demand and tightening competition for the market share projected for the U.S.

All four projection studies agree implicitly or explicitly on the importance of import access. While GATT talks have focused heavily on export subsidies and competition with the EC, import access could become as critical in the late 1990's. Strong growth in demand for farm products in the rapidly growing developing countries does not translate into imports unless their markets are open. Insuring this access will be difficult if developing countries follow the pattern of countries like Japan and invest part of their new-found affluence in farm subsidies. Such policies ultimately require impon restrictions to maintain the integrity of the programs and prevent being flooded with cheaper imports.

Given the importance of export growth, these trade scenarios would tend to extend the excess capacity problem in the U.S., leave the sector more dependent on government support and less market-oriented, and keep budget outlays higher. *[Patrick O'Brien, Director, Commodity Economics Division, Economic Research Service, USDA (202) 219-0880]* AO

In the March issue of Agricultural Outlook...

- Outlook for agricultural credit
- Farm legislation—status report
- U.S. imports of oats

AO is not published in February.

Commodity Spotlight

Challenges For U.S. Wheat Farmers

The changes that have swept the world in recent years—borders redrawn, new nations and new market economies emerging—are creating unprecedented marketing opportunities for U.S. goods. These events also present challenges, with some new nations or fledgling market economies becoming competitors, and others possibly erecting trade barriers that preclude potential export opportunities.

U.S. farms will continue to grow larger, seeking greater efficiency in order to remain competitive with producers in other exporting nations. Rapidly advancing technologies will play an increasing role in production, marketing, and management decisions. These are challenges that will shape not only the way producers do business, but also farm structure and lifestyles in rural America.

U.S. producers face a growing emphasis on environmental and food safety, as these issues take on greater prominence and public awareness. Soil, water, wildlife, and other conservation concerns, along with greater interest in the safe and

appropriate use of fertilizers and pesticides, will likely gain more attention in the years ahead.

Producers recognize the significance of these issues as they continue to produce the safest and most abundant food supply in the world today. Society, for its part, must be aware of the associated costs and economic impact of additional regulations on the ability of U.S. farmers to competitively produce safe and healthy foodstuffs. Added costs of production inhibit the ability to compete with other countries, where food safety may be a lesser concern.

The food safety issue takes on added significance in an era of expanded trade agreements. Many of the foreign products we compete with are produced with little attention to safety for either the consumer or the environment. As foreign products gain greater access to U.S. markets, the U.S. production sectors must be even more efficient or U.S. products risk displacement.

Competing in Today's Trade Environment

U.S. wheat producers will need all the market opportunities today's fiercely competitive trade environment offers. The EC, Canada, and other exporting nations continue to use a variety of export subsidy schemes to expand their own market shares at the expense of U.S. producers.

The Export Enhancement Program (EEP), as well as GSM credit guarantees, continue to be the most effective tools currently available to U.S. wheat producers in remaining competitive in the world market. EEP is a virtual necessity in exporting U.S. wheat to a sizable number of large, price-conscious markets. On the negative side, U.S.-Canada trade is complicated by the disparity between world and U.S. wheat prices. Increasing quantities of Canadian wheat have entered the U.S. market in recent years, because wheat and durum prices are comparatively higher in the U.S. than Canada. Shipments of Canadian wheat to U.S. destinations reached a record 1 million tons last year.

The broader area of trade policy presents a number of additional challenges. Maintaining a competitive edge in key markets is critical. The EC and other countries continue to dump heavily subsidized products into a growing number of markets. Backing away from any of the current programs or favorable trade policies that ensure U.S. market share would prove very costly to wheat markets, eroding producer prices and any leverage that U.S. negotiators have achieved in the multilateral round.

Two of the largest U.S. wheat markets—China and the former Soviet Union (FSU)—require special attention if favorable trading relationships are to be maintained. Together, these two market giants imported nearly 14 million tons, or nearly 40 percent of all U.S. wheat exports, in 1991/92. The former Soviet republics represent one of the largest outlets for U.S. wheat. These republics, including the former Baltic states, Russia, Ukraine, and Belarus, collectively import over 6 million tons of U.S. wheat annually.

The movement toward more democratic systems in the FSU and in other parts of Central and Eastern Europe requires continued assistance from the West. More specifically, the U.S. must maintain the flow of export credit accompanied by favorable trading terms in order to help avoid a relapse into a harsher form of government. This support should eventually include most favored nation (MFN) trade status for the individual republics of the former Soviet Union.

Clearly, maintaining an adequate food supply in the FSU is an absolute necessity if reform efforts are to succeed. GSM credit and EEP are the only tools currently available to accomplish these goals effectively. U.S. wheat producers also benefit, but the U.S. as a whole stands to reap substantial benefits through reduced military expenditures, increased national security, and expanded trade opportunities if the reform process is sustained.

The largest single market for U.S. wheat is China, with annual imports of 6.2 million tons over the past 5 years. The continuation of U.S. wheat sales to this important market hinges on maintaining China's MFN trade status.

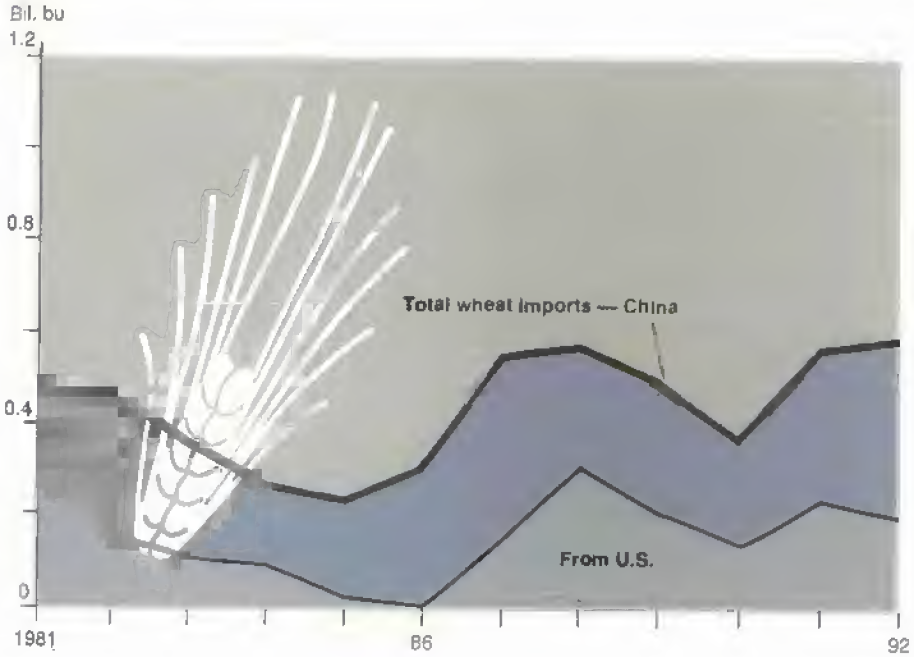
The MFN renewal debate, which arises each June, has become increasingly heated. Legislation to restrict China's MFN has been passed in both houses of Congress in the last two sessions, but was vetoed each time. The restrictions would risk severe retaliation by the Chinese in the form of sharply reduced U.S. wheat purchases.

Of greater concern are potential restrictions placed on countries that export textiles to the U.S. Such a development would alarm wheat producers since 40 percent of all U.S. wheat exports are sold to countries that in turn export textile products and footwear to the U.S. Unrestricted access to these and other markets is taking on greater importance as the world becomes smaller and more competitive.

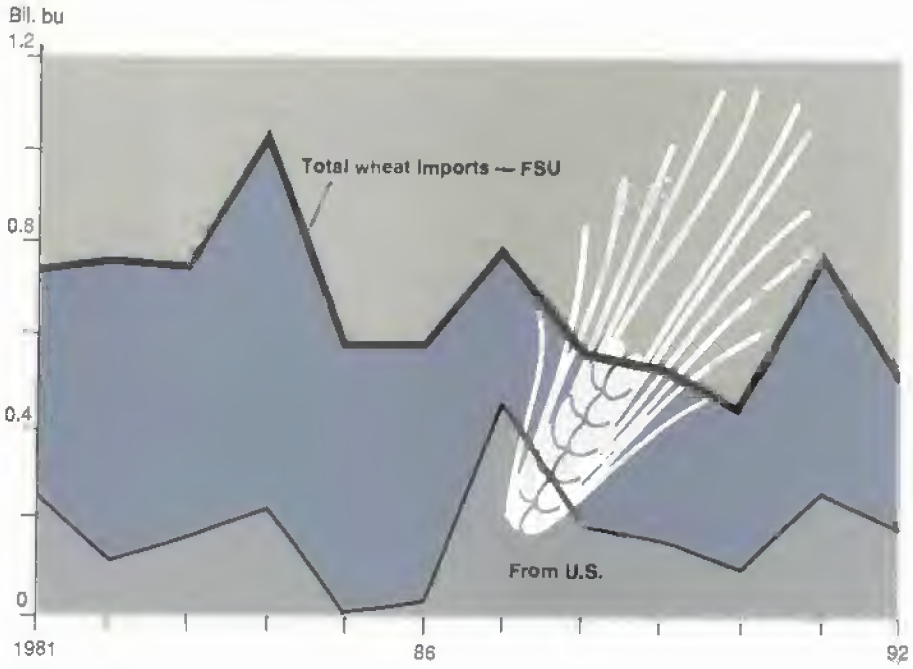
In a number of regions around the world, significant opportunities exist for expansion of export sales. The privatization of the milling and food processing industries in a growing number of countries will allow U.S. wheat producers to expand their presence in these markets. With a grain production, handling, and transportation infrastructure that is the envy of importing and exporting countries alike, U.S. producers should be able to tailor more wheat sales to the needs of individual buyers.

Ironically, a negative aspect of the privatization process is that export programs such as EEP normally perform better on a government-to-government basis. In other words, EEP or even GSM credits can often be more easily administered to buying agencies such as the FSU's Exportkleb or China's Ceroils, than to dozens of individual millers with potentially very different requirements. The positive aspects of the privatization process probably outweigh the negative, but the challenge is one that cannot be ignored.

U.S. Is a Key Supplier of Wheat to China . . .



. . . and to the Former Soviet Union



U.S. Wheat— A Lot of Class

With six classes of wheat to offer, no other country has the flexibility to match sales of raw material to the individual needs of millers, bakers, and processors around the world. This flexibility also requires a commitment to inform potential customers of the attributes of U.S. wheat and assist them in obtaining desired results.

U.S. spring wheats have achieved success in this area in recent years. Due in part to privatization or relaxation of government controls, spring wheat producers have penetrated a number of nontraditional markets by demonstrating the desirable characteristics of medium- and lower protein spring wheats.

Many of these markets, formerly hindered by government purchasing agencies, had not been exposed to alternative wheats or to information regarding specialized relationships between wheat and end products . Brazil, Egypt, China, the FSU, and a growing number of African nations, with technical assistance from U.S. Wheat Associates, are increasing their use of U.S. spring wheat in place of softer wheats from the EC.

Expanded interest in U.S. durum wheat is also evident in a number of nontraditional markets. Brazil, Egypt, Taiwan, the Philippines, and Indonesia are all examples where expansion of durum milling and production of pasta products is occurring. In many of these areas, traditional noodles are made from raw materials other than wheat, such as rice. The "pasta type" noodle is a new experience for them. If the popularity of pasta gains by even a small percentage of the explosive current growth in the U.S., the opportunities for U.S. durum wheat producers will grow accordingly.

A Commitment To Keep Up

Capitalizing on evolving market opportunities will require a continued commitment to market development efforts that are already in place—funded by producer

Commodity Spotlight

checkoffs (contributions) and matched by USDA funds. Expansion of the proven, effective programs administered by U.S. Wheat Associates and other cooperator groups into new and lucrative markets should pay sizable dividends to producer investments.

As the future unfolds, it is evident that U.S. wheat producers face serious challenges. Some are familiar; others are quite new. Many of today's challenges also represent opportunities for expanded sales and potentially greater incomes. Successful producers will be increasingly aware of national and international events that affect their competitiveness. They will become increasingly efficient, implementing future technologies and adapting products to remain competitive at home and abroad.
[Neal Fisher, Deputy Administrator, North Dakota Wheat Commission (701) 221-5111] AO

Upcoming Reports from USDA's Economic Research Service

The following are January release dates for summaries of the ERS reports listed. Summaries are issued at 3 p.m. Eastern time.

January

15 Livestock & Poultry
21 Oil Crops
22 Dairy

World Agriculture & Trade

New Global Consumer Markets

Today, more growers are extending their marketing horizon to an expanding global consumer marketplace. The products developed for these markets are often high-value commodities with a high per-unit selling price. A major reason growers have not targeted these markets in the past is that the products in demand are difficult to develop and introduce, and the costs of producing, packaging, distributing, and marketing these commodities are fairly significant.

Blue Diamond Growers is a farmer-owned marketing cooperative formed in 1910 as a primary marketing source of almonds for U.S. industrial users. Growth of the organization has given its farmer-members the ability to pool their resources to enter into consumer markets in many parts of the world.

Blue Diamond became extensively involved in marketing efforts in the 1960's when an increasing production base created the need to look for new markets. At that time, the industry was producing some 80 million pounds of almonds. Over the 20-year period between 1967 and 1987, production increased more than eightfold to 660 million pounds. Blue Diamond was successful in creating new consumer markets worldwide, with a substantial portion of the increase accomplished through partnership with the USDA's Foreign Agricultural Service (FAS).

Going Nuts Over Almonds

One of the first approaches was an effort to enter the U.S. consumer market for roasted almonds. The almond industry was producing a roasted smokehouse almond, along with a full line of other almond products. Few people knew about these items and the challenge was to acquaint the general public.

Among the first steps was to contact American Airlines with the idea of using almonds as an on-flight snack. This was a period when airlines were looking for ways to upgrade their services. American began serving small packets of almonds to their passengers, and the concept soon expanded to other carriers, providing the first real introduction of the product on a nationwide basis.

Additional development followed, but it was through the initial low or no-cost efforts that almond growers were able to launch the product and build enough volume to support an advertising program and build for the future. Without this innovative start, consumers may never have heard, "A can a week, that's all we ask."

Tapping the Foreign Markets

Since the 1960's a major share of the increase in the almond market has been outside the U.S. While almonds are the

leading nut consumed in the U.S. per capita, the domestic market alone could not have absorbed the huge production increases.

A primary example of the development of foreign markets is the successful marketing in Japan. Efforts began in the early 1960's, with a very small market in bulk almonds to meet Japan's need for sources other than Spain. Once a foothold was gained, the quality of the U.S. product won favor in Japan. However, expansion was slow; a major effort by the industry was necessary to generate substantial new consumption.

After initial discussions with the Japanese trading companies and exploring possibilities of their expansion, it became obvious that the Blue Diamond group itself would have to undertake the marketing effort. Blue Diamond created a very small market development office staffed by one local expert.

But promotional dollars were needed as well—more than the industry's resources could provide. Enter the Foreign Agricultural Service and its relatively new Export Incentive Program (EIP) that became available in the early 1970's. This began a long and successful market development effort in Japan that continues today, building and expanding the sales of almond products in that market.

The distribution system in Japan, which is extremely cumbersome, hampered efforts to get products into the hands of the consumer. So Blue Diamond began discussions with a Coca-Cola bottler in Japan. The bottlers are separate organizations from Coca-Cola U.S.A., although they receive their basic product through agreements with the U.S. firm. The individual bottling companies indicated they were willing to take Blue Diamond almonds into their distribution system. A principal reason was that Blue Diamond could assure them an ongoing advertising and promotion program through EIP.

That innovation laid the foundation for strong consumer acceptance of almonds—not only from Blue Diamond but from all California sources. Success resulted from the ability to promote the product on a nationwide basis and to have the distribution system in place to follow through with the promotions.

The experience in Japan was then applied in Korea, where there is a rapidly growing consumer market for products like almonds. Marketing almonds in Korea was impossible 10 years ago because of outright prohibition of U.S. almond shipments. Working cooperatively with the FAS and the U.S. Trade Representative, U.S. almond growers were able to curb the restrictions and open that market. Today there are no licensing restrictions. A substantial duty remains, but with effective cooperative promotional programs, the market has expanded over the last several years.

The experience in India was unique. The first assessment of India as a potential market for high-value products is that there are few possibilities because of the country's low income and high poverty rates. And at first glance, India appeared to be merely a bulk market. But a closer look revealed that in India, most almonds are consumed "out of hand" by individuals buying through local bazaars and food outlets.

Moreover, a niche market of about 10 percent of the population was found—a number equal to the total population of Germany, which is a leading importer of almonds. Almonds have actually long been revered in Indian culture—as a brain food, as a stimulant, and even as a wedding gift.

Tailoring Product To Market

In all markets, it is important to match the product to the consumers' tastes and to continue to offer innovative products that will attract and excite consumers. For example, in Japan, one of the fastest growing and most popular items is a soy-flavored slivered almond marketed only in that country. On the other hand, a recently developed snack item initially targeted for certain ethnic markets in the U.S.—chili with lemon-flavored almonds– has found enthusiastic acceptance in Mexico and the Middle East.

These are just a few examples of special adaptations to a market, but product development and innovation is an area where the up-front cost can be much less than the promotional and merchandising costs required to propel a product into a market. Tailoring a product to consumer tastes and giving it limited but effective merchandising support can be one of the most successful marketing strategies.

These efforts to expand almond markets around the world have reaped rewards for California almond growers. Consumption of U.S. almonds has grown from 137 million pounds in 1970 to 556 million for the 1991/92 marketing year. The industry is now in equilibrium, with estimated production very close to the yearly sales figures. Growers in California are looking forward to the next few years as profitable ones.

[Steven Easter, Vice President, Blue Diamond Growers, Sacramento, California (916) 442-0771] AO

Upcoming Reports from USDA's Economic Research Service

The following are February release dates for summaries of the ERS reports listed. Summaries are issued at 3 p.m. Eastern time.

February

12 Agricultural Resources--Inputs
17 Agricultural Income & Finance
18 Wheat Yearbook
19 Agricultural Outlook
23 Livestock & Poultry
24 Cotton & Wool
25 Agricultural Exports
26 Feed Yearbook

Climate Change on The Horizon?

Until recently most of the world has never acknowledged weather and climate as a renewable natural resource. But it has become more important today than at any time in history to be aware that this essential resource is renewable, not inexhaustible.

The current debate about weather and climate change is not new. In the 1970's the debate focused on increased variability in future climate and its implications for the sustainability of agricultural production. In the 1980's, climate variability was still debated, but a greater concern about climate change was captured in media headlines throughout the world. The new focus was on global warming, believed to be related to the well documented increase in levels of several greenhouse gases in the atmosphere.

The potential for global warming has raised world interest in future weather and climate to a higher level of awareness. Estimates of warming, derived from the General Circulation Models (GCM's), will receive a great deal more attention in the decade ahead.

The Human Factor

Today, the potential for global warming is described by some scientists as a human-induced warming of unprecedented magnitude. If this is correct, it is essential to distinguish natural change from those brought about by human activity. Key questions include: Is human contribution to increased levels of greenhouses gases sufficiently great to overcome the natural variability in the world's climate? If so, what can and should be done to ameliorate human influence? Can the change be reversed or only slowed? What would be the impact if no action were taken? Are quality data available to answer these questions?

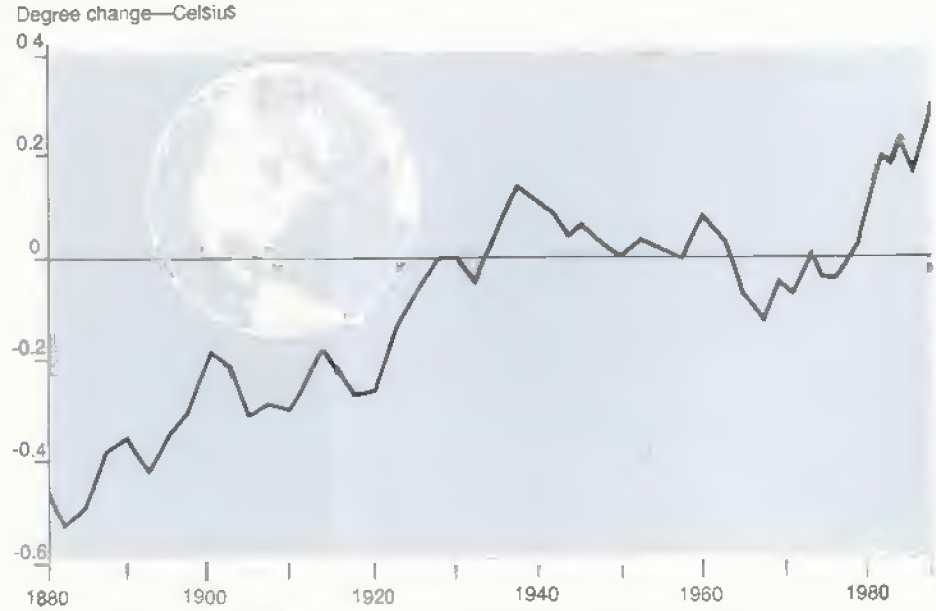
These are but a few of the issues raised by scientists around the world. Specifically, the agricultural community must look critically at its contribution of man-made greenhouse gases and evaluate actions it can take to ameliorate emissions while maintaining necessary food and fiber production levels.

Perhaps the strongest affirmation of global warming came during the record-setting drought of 1988 over North America. Dr. James Hansen, Director of the Goddard Institute for Space Studies, described to Congress the global temperature pattern for the last 100 years. Based on this and analyses by others presented in Congressional testimony in June 1988, newspapers reported that global warming was already underway. Clearly, the temperature pattern showing a global warming trend since the 1880's was impressive at first glance. However, closer inspection revealed some significant irregularities in the pattern.

Three periods of warming stand out—about 1885 to 1900, 1920 to 1940, and the most recent—from the late 1970's to the present. The warming is 0.3-0.4 degrees Celsius, for each of these periods, based on the 5-year-running mean curve.

However, the total change for the 100-year period is only about 0.6 degrees Celsius. If the warming is primarily the result of increasing levels of greenhouse gases, due to human activity, then a problem arises in explaining the cooling of more than 0.2 degrees observed from about 1940 into the mid-1970's. This was a period of unprecedented industrial growth around the world, with rapidly escalating emissions of greenhouse gases and concentrations. The period saw the greatest rate of carbon dioxide increase after 1950. A more comprehensive

Average Global Temperatures Have Increased over the Past Century



Global temperature change, 5-year moving average.
Source: George C. Marshall Institute, 1989.

explanation for the observed global temperature pattern must be found by looking beyond the greenhouse gas theory.

A monthly carbon dioxide curve, based on carefully documented measurements since 1957, shows annual oscillations of CO_2 levels that reflect the change in seasons. In particular, CO_2 levels decrease during summer in the Northern Hemisphere, when plant growth is most active, and increase during winter when energy use is highest and plant growth slows. The average rate of CO_2 increase in recent years is about 1.5 ppm (parts per million). However, small variations are noted—the rate of increase in CO_2 flattened slightly, for example, during the 1970's energy crunch.

Looking Ahead: Best Estimates

When the question of increased climate variability received such attention in the mid-1970's, USDA, in cooperation with other federal departments, began the task of producing the best estimate of the world's temperatures for the year 2000. The global curve of temperature observations developed for this work shows the pattern from 1880 to be similar to Dr. Hansen's findings. Leading climatologists from around the world were enlisted to estimate the global temperature pattern during the next 25 years.

The results showed that with the same data as a starting point, different assumptions and/or models led to very different conclusions. These analyses represent the divergence in thinking and in the knowledge base of inputs by leading scientists from 17 nations. The results also confirm that the understanding of very complex interactions in the Earth-atmosphere system, which produce weather and climate, is far from complete.

One natural cause of climate temperature variation has been documented by analysis of global temperature patterns after major volcanic eruptions. The sharp cooling after a major eruption is related to the large amount of particulate matter ejected into the upper atmosphere. This particulate matter acts as a shield against incoming solar energy and effectively increases the earth's albedo or reflected radiation, reducing the amount of energy reaching the earth's surface. Effects of the cooling for large eruptions last approximately 2.5 years.

Mount Krakatau's eruption in 1883 is one of the largest and most heavily studied, and may also be a partial explanation of the rebound to higher temperatures beginning in the late 1880's. The reduction in solar energy after the June 1991 eruption of the Philippines' Mount Pinatubo has now been documented, and preliminary climatological analyses are confirming that global temperatures have decreased about 1-1.5 degrees Fahrenheit.

The Models: How Reliable?

The bases for projections of strong global warming, with a doubling of CO_2 levels, are produced by General Circulation Models. But GCM's only reflect what they are asked to find. Thus by inserting into the GCM equations a coefficient for elevating levels of greenhouse gases, some degree of warming would be expected.

A major weakness of past GCM models was their inability to reflect adequately the energy exchanges between the Earth-atmosphere interface. This includes water vapor from the oceans, rivers, and lakes; heat from the land and extraction of heat over ice and snow fields; and evapotranspiration from plants. The water vapor flux is the source of moisture for the formation of clouds, leading to rainfall. The water vapor content in the atmosphere is also the atmosphere's most abundant greenhouse gas. It is only because of water vapor and its ability to selectively trap outgoing long-wave terrestrial radiation that life on our planet is possible. Without the benefit of this warming, the earth would be too cold to sustain life as we know it.

The ability to integrate the Earth-atmosphere energy exchanges more accurately into the GCM models has significantly improved the performance of the most recent GCM models. Use of improved coefficients from the Earth Radiation Budget Experiment has provided better insight on the potential effects of cloud cover changes and resulting global temperatures. A small increase in cloudiness expected with global warming and greater evaporation rates could more than offset the potential warming due to increased greenhouse gas.

These findings illustrate the degree of sensitivity in atmospheric response and the importance of improving the understanding of the role played by increased clouds and water vapor in the atmosphere.

Initial results from coupled ocean-atmosphere GCM's also indicate a reduced rate for global warming. While these are encouraging results, they also confirm that

Climate & Weather

The World Meteorological Organization describes "normal climate" as the average of the measured site-specific daily weather elements, such as temperature and rainfall, for a 30-year period. Current "normals" cover the period 1961-90. "Weather" refers to the observed daily events that, when averaged for a period of time, describe climate. Like our rapidly changing daily weather, climate is dynamic, not static.

The world's climate has changed continually over time. However, it has been systematically documented by instrumental observation for less than 150 years. Earlier documentation of climate change comes from indirect but reliable analysis of such factors as sedimentation or pollen content contained in cores extracted from the earth, gas molecules trapped in ice cores extracted from glaciers, recorded dates of ice formation on lakes, the geologic indications left by expansion and contraction of the world's major ice fields, and the associated rise and fall in sea level. These earlier changes can all be directly attributed to natural causes.

today's GCM model output is not adequate to provide the quality of analysis needed, and caution is advised when using GCM analysis as a basis of policy decisions.

The GCM's are even less reliable for estimating potential changes in precipitation than potential temperature changes. In a comparison of the estimated precipitation, GCM models' results for key agricultural regions do not agree on the direction—positive or negative—of change. One GCM result produces an expanding desert in the grain belt of the U.S. Great Plains, while another predicts increased moisture supplies.

Uncertainty Dictates Policy Caution

Climate variability is still a major factor in determining crop yield response. The GCM's are the best tool available for estimating potential for global warming. However, they cannot yet adequately depict the many complex interactions of the Earth-atmosphere system and thus future climate.

Research has clearly shown differing response of plants grown under elevated levels of CO_2. The agricultural community must not ignore this issue in plant breeding programs and in seeking new management techniques to reduce agriculture's greenhouse gas emissions while sustaining production. Because increased levels of greenhouse gases affect global climate patterns, the problem can be addressed only through worldwide cooperation.

For agriculture, understanding regional climate pattern changes is of greatest importance. The GCM's cannot yet produce accurate estimates at the regional level. Moreover, conflicting results from the GCM models must be clarified before major policy actions are finalized. Much work remains before more definitive answers can be provided to policymakers, but research is forging ahead on many fronts.

[Norton D. Strommen, Chief Meteorologist, World Agricultural Outlook Board, USDA (202) 720-9805] AO

Policy & Sustainable Agriculture

Government policies and programs have significant impacts on the economics of alternative systems of farming. American agriculture today is, in no small part, a reflection of government policies and programs of the past. While changing values and technological possibilities may have dictated the fundamental nature of economic development in agriculture as in other segments of the economy, the structure of the agricultural economy reflects choices of public policies and programs to support the development process.

A fundamental purpose of public policy is to resolve inherent conflicts between the shortrun interests of individuals and the longrun interests of society. In many cases, profit incentives in a free market provide adequate motivation for individuals to act in ways that are also in the best interest of society. In other cases, free-market incentives lead individuals to act in ways that conflict with the longrun interest of the larger society. When this occurs, society, through the public policy process, must provide different incentives or disincentives such as subsidies, penalties, and regulations, to ensure individual decisions that are consistent with the welfare of society.

The Advent of "Industrial" Agriculture

The ultimate objective of publicly funded programs in agricultural research and education, resource conservation, farm credit, marketing, and price stabilization have all been to reduce consumers' costs of food and fiber and to support economic progress of the nation. The most efficient means of achieving those objectives has been through implementing industrial strategies such as specialization, mechanization, routinization, and mass production of agricultural commodities.

The objective was not necessarily to industrialize agriculture, but rather to make agriculture more efficient. But public policies have helped make U.S. agriculture more "efficient" through a process of industrialization.

At the turn of the century, a large proportion of the U.S. work force was engaged in farming, and a substantial share of consumers' incomes was spent on food and fiber. Industrialization required manpower to run the factories, and discretionary consumer income to buy the products that the factories turn out. Agriculture had to become more productive and efficient to reduce its claim on consumers' incomes and to free a number of farmers and their families to work in the factories and offices of an industrial economy.

Government programs for agriculture historically were designed to increase agricultural productivity by substituting mechanization for farm labor, and industrial technology for individualized farm management. Commodity price stabilization programs reduced the risks inherent in agricultural markets and allowed farmers to make long-term investments in specialized farm equipment, production facilities, and technologies. Price support programs helped farmers to absorb the risks of large commodity-specific capital investments. In the absence of price stabilization programs, farmers would have been forced to maintain diversified farming systems.

The industrialization of agriculture has greatly increased output per acre and per farmer and has reduced the economic costs of food and fiber to consumers. However, farming methods that account for most of the increases in agricultural productivity have now become the primary source of environmental and social concerns regarding longrun agricultural sustainability.

Costs of Industrial Agriculture

Environmental concerns linked to agriculture are associated primarily with industrial methods of agricultural production. Commercial pesticides and fertilizers, which are absolute necessities for large-scale specialized agricultural production, are primary targets of those concerned with the negative environmental impacts of agriculture. Commercial agricultural chemicals are routinely detected in groundwater, lakes, and streams through periodic monitoring. Runoff from large-scale, confinement livestock and poultry feeding operations also pollutes water supplies in many areas of the country.

Scientists disagree on the extent and magnitude of water quality risks associated with industrial farming practices. However, most agree that farmers who reduce their reliance on chemical inputs or produce livestock and poultry in open fields face serious competitive challenges in maintaining the economic viability of their operations. Even more significant, these farmers have had little assistance either from government subsidies and incentive programs or from research and education programs relevant to their approach to farming.

Economics of the marketplace dictate decisions regarding protection and use of natural resources within industrial systems of farming. Yet markets do not place a significant value on costs and benefits that are expected to accrue more than three or four generations into the future. At any reasonable market interest rate, the present value of large sums of money approaches zero if discounted over a few hundred years. For example, at an interest rate of 7 percent, the present value of $1 million that will not be received for 200 years is only $1.32. The present value of a future cost of $1 billion is only $1.53 if those costs can be deferred for 300 years.

Farmers who are forced to focus on short-run economic survival are in essence forced to ignore longrun social costs or benefits associated with resource management. Past government farm programs have reinforced the focus on shortrun economic survival and thus farmers have largely ignored their depletion of the resource base needed to sustain longrun production.

A New Mandate for Agricultural Policy

Society appears to be giving agriculture a new mandate for the 21st century. The new mandate is to develop a food and fiber system that continues to be efficient and productive but is also ecologically sound—in essence, a sustainable agricultural system.

Agricultural policies of the past have focused almost entirely on satisfying human food and fiber needs—only one of the multiple objectives of a sustainable agriculture. Food and fiber needs have not been met by integrated systems of plant and animal production, but rather by specialized systems that treat each enterprise as a separate profit center within the farm business. The technologies developed and transferred to farmers have not been site-specific and individualistic, but have been mass production technologies developed for mass distribution and wide-scale adoption among large numbers of farmers. The new mandate will require a different perspective on the role of agricultural policy and on the programs needed to achieve a new set of policy objectives.

Public policy must reconcile differences, real or perceived, between benefits and costs to individuals and benefits and costs to society in general. No conflict exists between economics and ecology for individuals or society in the long run. Farming systems in the future must be environmentally sound or they will not be economically viable. Systems that poison water, for example, in the process of producing food are neither socially nor economically viable over the long run.

However, important conflicts do exist in the short run. Like the agricultural sector, society as a whole faces conflicts between shortrun decisions and longrun consequences.

Pricing the Future

Discounting is the reverse of compounding interest to determine the future value of a current investment. It is a process used by economists to calculate the present value of costs or returns that are not expected to occur until some time in the future. Market-driven incentives are reflected in discounted net present values, calculated using market rates of interest. For example, at an interest rate of 7 percent, the present value of $1 million that will not be received for 200 years is only $1.32. The present value of a future cost of $1 billion is only $1.53 if those costs can be deferred for 300 years.

In the short run, farming systems that are most profitable for individuals may not be environmentally sound. Conversely, farmers may be well aware of environmentally sound alternatives but be unable to use such systems because they are unprofitable. Farmers might identify individual tradeoffs by asking three simple questions regarding current farming practices and methods:

- How would I farm this land if I had to make a living on this farm 100 years, or even 1,000 years, from now?
- How would I farm this land if I had to live downstream or downwind from the farm over the next 100 or 1,000 years?
- Finally, among those things that I would do differently, which can I afford and still make an acceptable economic return next year, over the next 5 years, or over my lifetime?

The things that farmers would do differently but cannot afford reflect their individual tradeoffs between economics and the environment.

Reconciling Short & Long Run

Resource conservation and environmental protection can be achieved only by sacrificing some level of shortrun profits. Many farmers choose to forego some potential profits to conserve their resource base or protect the environment. But there are limits to the sacrifices that individual farmers are willing and able to make in order to serve the greater social good. Thus, public policies must be applied either to impose environmental constraints through regulations or penalties, or to offset foregone profits with incentive payments or targeted subsidies.

Tradeoffs between shortrun and longrun benefits and costs exist for society as well as for individuals. The current generation must make some economic sacrifice to ensure a clean environment for future generations. Relying solely on individual incentives of the marketplace runs the risk of exploiting the resource base and degrading the environment to maximize benefits for ourselves and our anticipated offspring. Collectively, however, we may feel a social or moral responsibility to preserve an acceptable quality of life for many future generations or for the longrun survival of humanity. Collectively, through government policies, we may make sacrifices that we are unwilling or unable to make as individuals.

Resource conservation and environmental protection represent "investments" in longrun productivity for individuals and for society as a whole. As in the case of making financial investments, current gratification must be foregone in order to ensure longrun viability. Farmers do not intentionally degrade the physical or social environment to maximize profits. However, public policies must be developed to ensure that it is at least economically possible for individual farmers in the short run to utilize systems that are also environmentally sound, and thus sustainable, over time.

A new agricultural policy mandate implies decoupling current commodity-based programs from their current objective of price stabilization and supply management, and recoupling them with multiple objectives of agricultural sustainability. The new mandate will dictate that a portion of publicly funded research and education programs be diverted from technology development in order to support integrated systems approaches to managing diversified, site-specific farming operations. The new mandate will require policies and programs empowering people to make individual decisions that further their own and the public's interest in the longrun sustainability of agriculture. The new mandate will require institutional change. *[John Ikerd, Extension Professor, University of Missouri (314) 882-4635]* AO

Sustainable Agriculture: Industry's Role

The magnitude of the global challenge facing agriculture is enormous. Today's population of 5.4 billion is forecast to grow to 8 billion by the year 2020. The world food supply must double in the next 30 years to meet this growth and to provide the improved diet needed by many people on this planet.

But the natural resource base is limited. In 1960, about one acre of cropland was available to support the food and fiber needs of each person. Today, only three-quarters of an acre is available. And in just 30 years, this will have dropped to less than half an acre, making productivity growth crucial. Weeds, insects, and plant diseases are all vying for a bite of the agricultural pie. In 1990, for example, the American Farm Bureau Federation estimated pest and weed damage to U.S. crops at over $20 billion.

In the face of this enormous challenge—growing population, less arable land, and unrelenting crop pests—the public is becoming increasingly concerned about the effects of agrichemicals, one of the major tools of farm productivity.

Asking More Of Industry

Today the public, the government, and the farmer are asking more of industry. "More" means essentially that environmentally sound practices and concern for quality of life are intrinsic to our agricultural system. Society wants to ensure that agriculture is sustainable—that it nourishes us today and safeguards the land for future generations.

Sustainable agriculture requires a holistic view: sustainable agriculture is productive, socially acceptable, economically viable, and environmentally sound. These four components work and thrive together to achieve a balanced, sustainable system—at the farm, national, or global level.

This system is driven by the values and goals of society, including farmers, consumers, manufacturers, researchers, regulators, and environmentalists. Public policy, science, and technology shape the sustainable agriculture system. Science and technology can produce the tools to help farms balance production, economics, quality of life, and environmental protection. Such tools might include cultural practices, new crop varieties, natural enemies, diagnostics, biotechnology, agrichemicals, biologicals, and computer-decision support systems.

Agrichemicals such as the sulfonylurea herbicides are a vital tool in achieving a sustainable agriculture. Since their introduction in 1982, 12 sulfonylurea herbicides have been commercialized by Du Pont, including "Accent," the newest postemergence sulfonylurea herbicide for weed control in corn.

Agrichemical companies like Du Pont are developing herbicides that can be applied at low-use rates and that fit into integrated pest management (IPM) systems and conservation tillage programs. Farmers using Du Pont's "Accent" can wait until weeds emerge to decide if treatment is needed. And because the herbicide is foliar applied, it reduces environmental impact even more.

Environment & Resources

Discovering the right chemical is only part of the answer, however. Environmental stewardship goes beyond discovery to the application and safe use of products. Among the steps taken by Du Pont in the agrichemicals industry are:

- development and education efforts at eliminating dust, splashing, and drift problems;
- developing packaging that is biodegradable, recyclable, reusable, or disposable in an environmentally sound way, and ensuring on-target application;
- producing water soluble bags that can be added to a spray tank as a package, reducing the potential for worker exposure;
- introduction of container recycling projects in which containers are collected, processed, and made into blow-molded jugs for reuse;
- development of diagnostic tools for farmers to identify disease problems in the field and make better decisions about when to treat with fungicides (Du Pont's first diagnostic kit for detection of cereal eye spot was successfully introduced in Europe this year).

Yet, chemistry alone will not lead to a sustainable agriculture. Agrichemical companies are investing heavily in the following technologies:

- biotechnology to produce crops with insect- and disease-resistant characteristics;
- insecticidal virus products (IVP's) to provide growers with safe, effective, and environmentally compatible components of IPM programs;
- new manufacturing processes for Bt insecticides to improve their effectiveness in controlling insects in fruit, vegetable, and cotton crops, as well as in soybeans and alfalfa; and
- specially developed new grains that provide increased margins for farmers by adding value to animal feed and to oils for consumer use.

Partnership Is Vital

Partnership is vital in achieving a sustainable agriculture. Several successful partnerships initiated by Du Pont are leading to more effective use of science and technology and have the potential to help generate good public policy.

The "No-Till Neighbors" program is an example of a forum for farmers to teach other farmers about residue management and conservation tillage practices. Thousands of farmers participate in field days, receiving valuable information about tillage methods that provide better water and soil conservation. Partners in this effort are the Soil Conservation Service, extension agents, dealers, farmers, and grower associations.

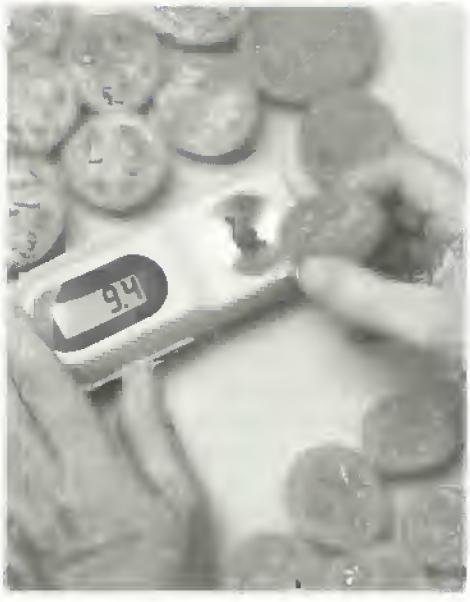
At Du Pont's Remington Farms on the eastern shore of Maryland, an on-farm research, demonstration, and education project in sustainable agriculture is being launched in spring 1993. Participants include the USDA, Environmental Protection Agency, and representatives of research and environmental institutions.

Four different cropping systems will be compared over a 5-10-year period to provide important data on economics, productivity, and environmental impact. These systems represent a wide spectrum of farming practices that use a range of pest management strategies. The partners in this effort represent diverse points of view about sustainable agriculture, examining together what farming systems work best, and learning to work together.

Achieving a sustainable agriculture that balances economics and environmentalism is a complex process. But by combining science and technology with nature, partnerships can expand today's knowledge of what is possible and contribute to a continuous improvement in the quality of life.

[Raymond F. Eid, Consultant, Du Pont Agricultural Products (302) 427-6853] AO

Technology



Agricultural Technologies For the 1990's

By the turn of the century, today's new technologies may be integrated into the high-tech agricultural systems of tomorrow—if there is adequate knowledge of how the technologies will work as part of a sustainable system. This knowledge must be readily available to farmers, to public and private sector advisors working with them, and to the consuming public.

U.S. farmers' knowledge and understanding of the application of new technologies are viewed with envy by our global competitors, and will be key to future U.S. competitiveness. In order to maintain this lead, U.S. agriculture needs decision support systems that integrate economic, environmental, and social acceptance into the decision making process. Simple technology transfer models will not serve the agriculture of the future.

The New Technology Must Be Acceptable

Agriculture cannot afford to operate at cross purposes with a societal message that agricultural technology benefits and serves not only farmers and ranchers but all Americans and many citizens around the world. The benefit of the new technology to the consumer, as well as the farmer, must outweigh the environmental risk associated with its use.

In the absence of education, the public's perception of risk will become the reality. The potential for public outrage from a perceived excess human health or environmental risk may outweigh the technology's potential benefit.

The impact of technologies on the nutritional value of foods will face increasing scrutiny. Application of any technology likely to pose a threat to human health and well-being will be unacceptable. Continued research will clearly delineate the level of allowable natural or synthetic compound residues, if any, in edible portions of foods. Food labels will likely contribute to an increase in consumer interest in nutritional attributes of food products.

Technology applied to target animals or plants in an inappropriate way raises issues such as animal safety and welfare and the impact of the technology on animals' metabolism, nutrition, and host disease resistance. Agricultural systems, incorporating new technologies, need to be carefully designed, developed, and implemented with regard to the safety and well-being of animals.

Improved communication among researchers, farmers, and consumers has increased understanding of benefits from new technologies and enhanced public acceptance of the need for their use. Since scientists are viewed by the public as basically credible sources of information, they need to devote more time to public communication. This task should not be passed off to information specialists and the media.

By the year 2000, it will not be sufficient to make new technologies available for profitable application only on U.S. farms. New global agreements will require global acceptance of new technology applications. Economic advantage will come from swift incorporation of new technologies, but society will demand increasingly greater documentation and accountability of the new technologies' benefits. Accountability will require interdisciplinary approaches that are ecologically sound, socially acceptable, and consumer driven.

Our food and agriculture system is dependent on a wide array of resources. The nonrenewable nature of many of our energy resources, for example, is an issue of concern. Interest is building in the notion of agriculture actually contributing energy, for use on and off the farm, through products such as methanol, ethanol, or longer-carbon-chain products. Examples include biodiesel, hydraulic oil, and lubricants. However, this will become reality only if these production systems also pass the tests of competitiveness, profitability, and environmental soundness.

Integrated Management Is a Requirement

The food and agriculture systems of the future will be sustainable in the broadest context, focusing on integrated management systems. To be more specific, an integrated production and marketing system is composed of subsystem components utilizing technology, information, and management to determine how best to use the resources available, all interacting to achieve a desired outcome. This strategy includes recognition of the need for strong rural communities and involvement of citizens to support and contribute to the success of production systems.

The ability of marketers to reach consumers effectively is central to the success of agricultural production, processing, and marketing systems and the use of new technologies. Marketers have effectively used information technology to develop domestic and international markets. The application of information technology will dramatically change the agricultural production systems to match consumer demand. At the same time, the new production technologies must lower unit costs of production while reducing human health and environmental risk.

[Vivan M. Jennings, Deputy Administrator, USDA Extension Service (202)720-5623] AO

Building a Better Tomato

Since 1982 a team of researchers at Calgene Fresh, Inc. has been successfully applying the latest developments in genetic engineering, plant breeding, and farming to solve an age-old problem—how to supply an abundance of great-tasting tomatoes throughout the year. Although Americans buy tomatoes each month of the year, for 8 or 9 months the tomatoes simply don't taste very good.

In a USDA survey that asked consumers how satisfied they were with 31 common grocery items, tomatoes ranked last. Why don't tomatoes taste good? First, fresh tomatoes are picked while they are still green so that they will survive the long journey—about 16 days on average—from farm to market. Ripe tomatoes do not last 16 days.

Once the tomatoes are picked, they are sorted for signs of damage or disease, and for color. The red ones are not shipped because they will not last long enough. The green tomatoes are packed, shipped, repacked, and delivered to stores. By then they may look a little more red, but they probably still taste green.

Good Taste from Good Genes

To produce a better quality tomato, Calgene searched for a way to have the tomato ripen longer on the vine, developing full flavor but durable enough to ship. Their product, the FLAVR SAVR® tomato, spends more days on the vine than other tomatoes, yielding more flavor.

To achieve this, researchers at Calgene identified the gene that sends the softening message in tomatoes, made a copy of the gene, and inserted it backwards into the tomato plant. This, in effect, causes the softening message to be canceled out, slowing down the softening process. FLAVR SAVR® tomatoes have time to develop better flavor on the vine and to hold that peak flavor longer. They are grown from seed and cultivated like other tomatoes, and they have the same strong nutritional profile.

Beyond the Vine: Availability, Value

The success of the FLAVR SAVR® tomato will likely depend on its ability to deliver significantly better taste at a fair price all year long. The growing process is only one part of the puzzle. Calgene Fresh also looked at each stage of the distribution process and identified steps where improvements could be made. For example, too much refrigeration dramatically reduces a tomato's flavor. FLAVR SAVR® tomatoes are delivered in trucks at temperatures that never fall below 55 degrees. To avoid handling problems, the company developed a totally integrated system for getting the tomatoes from farm to market.

Calgene Fresh has been conducting consumer research prior to its introduction of FLAVR SAVR®. They have established a new brand name, MacGregor's, which enables the consumer to recognize the tomatoes readily. Calgene has also asked consumers how they want the tomatoes displayed in the store. As a result, the tomatoes are displayed in boxes that call to mind a rural farmstand, which consumers associate with good taste and quality.

A critical element of consumer satisfaction is value. Calgene Fresh has found that consumers are willing to pay more if they receive more value—a better tasting tomato at a fair price. Among shoppers that try the tomatoes, 75 percent make a repeat purchase.

Information as Well as Flavor

Consumers are beginning to recognize the name FLAVR SAVR® as representing a genetically engineered food. They want to be able to make an informed choice about this technology and its benefits. Calgene Fresh has developed methods of providing such information.

First, the MacGregor's FLAVR SAVR® tomatoes will be identified with a label that reads "Grown From FLAVR SAVR® Seeds." A free brochure will be provided on the carts in stores, containing more information about the tomatoes. Inside the brochure is the story of how FLAVR SAVR® tomatoes are planted from good tomato varieties, how they are left on the vine longer to develop flavor, and how they are brought to market. On the back of the brochure the tomatoes are identified as genetically engineered. In addition, a complete nutritional profile is provided, as well as a toll-free telephone number and address to request more information or to comment.

Calgene Fresh research has established that the FLAVR SAVR® tomato is not only nutritious and good tasting, but also safe to eat. Findings have been submitted to the U.S. Food and Drug Administration and to USDA. Data are available in a technical report published by CRC Press, *Safety Assessment of Genetically Engineered Fruits and Vegetables: A Case Study of the FLAVR SAVR® Tomato*. USDA has given the go-ahead to proceed with growing tomatoes from FLAVR SAVR® seeds, and FDA approval is anticipated prior to bringing the product to market in 1993.
[Thomas L. Churchwell, CEO and President, Calgene Fresh, Inc. (708) 864-3333] AO

Outlook for Animal Biotechnology

Animal biotechnology—the biological or genetic modification of living organisms—has been applied to the breeding of farm animals for most of this century. Artificial insemination was the first animal biotechnology to have a major impact in the 20th century, particularly in the breeding of dairy cows and pigs. The impact was magnified by the technology of freezing semen.

More recently, the biotechnologies of embryo cryopreservation and transfer have resulted in rapid worldwide dissemination of extremely valuable genetic stocks. In the past few years, commercial ventures have begun based on the biotechnology of cloning animals. Cloning, in this context, means the production of multiple identical animals, each derived from a single embryonic cell.

These technologies will have an impact for many years as plans are made to preserve as many species as possible to protect the genetic resources of the world.

An especially promising development is the genetic modification of pigs and sheep in which levels of growth hormone in the blood are increased by incorporating additional growth hormone genes. The important initial result of this research was the demonstration that transgenic modification—permanent genetic modification passed from generation to generation—could be made in farm animals. Subsequent significant results are that the growth-hormone-transgenic pigs grew faster, used feed more efficiently, and were very lean. Animals for production agriculture will not be possible until much more is learned about the regulation of such growth hormone genes.

Technology

Genetic Basis of Animal Health

Genetic modification of animals to improve their health offers a great deal of promise because of the resources dedicated to understanding mechanisms of infection and host resistance. One potential method is suggested by observations in nature in which mice secrete a retroviral-like protein and become resistant to viral infection. Chickens made transgenic by retroviral infection of the embryonic egg developed resistance to further infection when an incomplete retrovirus was incorporated into their genomes. Transgenic sheep have been produced with new genetic material from a virus in an effort to induce resistance to the virus.

The horizon for disease resistance through genetic modification of animals is not yet clear. Incorporation of transgenes into production cattle would take 15 years if a genetically modified cow with desirable traits were available today. Most of the time would be consumed in breeding the gene into the production population and testing each generation for persistence of the trait. The introduction into swine or sheep would be more rapid because of their shorter generation intervals. Nonetheless, the reality of genetically modified animals with enhanced disease resistance as a permanent trait seems to be at least 10 to 15 years into the future.

The horizon could move closer—5 to 10 years—for those genetic alteration schemes that need only to produce somatogenic, temporary modification of treated animals rather than transgenic animals. If production of antibodies rather than specific cell production of a protein is needed, animals could be injected by a "gene gun" with DNA coding for an appropriate antigen.

Better Animal Products Close to Fruition

A driving force for research to improve product quality of milk is the prediction that proteins with pharmaceutical value could be produced accurately and in large quantities in one of nature's best bioreactors, the mammary gland. An example of this research is the production of the pharmaceutical α-1 antitrypsin in the mammary gland of sheep. Deficiency of α-1 antitrypsin results in susceptibility to emphysema.

Transgenic sheep from a government-industry collaboration in Edinburgh, Scotland, produced α-1 antitrypsin as 2 to 50 percent of their milk protein. The transgenically produced material was bioactive, indicating that the mammary gland is capable of correctly processing proteins normally produced elsewhere in the body. The value of milk produced by an experimental transgenic ewe has been estimated at $7,000 per liter.

Pharmaceutical research will affect agriculture in several ways. Some small population of milk animals will be diverted from food production to pharmaceutical production, perhaps as much as 5 percent of the U.S. dairy herd in the next 30 years. Continued research on pharmaceutical production in milk will likely lead to experiments in modifying milk to improve cheese production, reduce fat concentration, and reduce mastitis susceptibility. Other modifications may make cow's milk more like human breast milk.

Research on the potential for modifying the composition of meat and eggs is in progress, but it is too early to make predictions. The horizon for food products from genetically modified animals will depend on both the research and regulatory environment.

The field of genetic modification of farm animals is in its infancy. Growth and development of the field is in part sustained by biomedical interest in transgenics. The usefulness of genetically modified animals is dependent on better understanding of the genes that regulate growth and development and of how to control genes that are inserted into animals.

Continued research on genetic modification of animals depends on the scientific community's success in communicating to the consumer that this research has the potential to improve safely the quality of farm products and to improve animal health and productivity.

[Caird E. Rexroad, Jr., Research Leader, Gene Evaluation and Mapping Laboratory, Livestock and Poultry Sciences Institute, Agricultural Research Service, USDA (301) 504-8534] AO

Biotechnology: Consumer Attitudes

Biotechnology is developing within a larger context of consumer concerns about health and environmental problems. Consumers are becoming increasingly concerned about food safety, and the use of biotechnology in agriculture and food production could elicit concerns similar to those expressed about agricultural chemicals.

The outlook for biotechnology depends on whether consumers accept food produced through biotechnology as safe and beneficial, and whether they view biotechnology methods as ethically sound. Acceptance of such food products, in turn, depends upon a much greater commitment to consumer education.

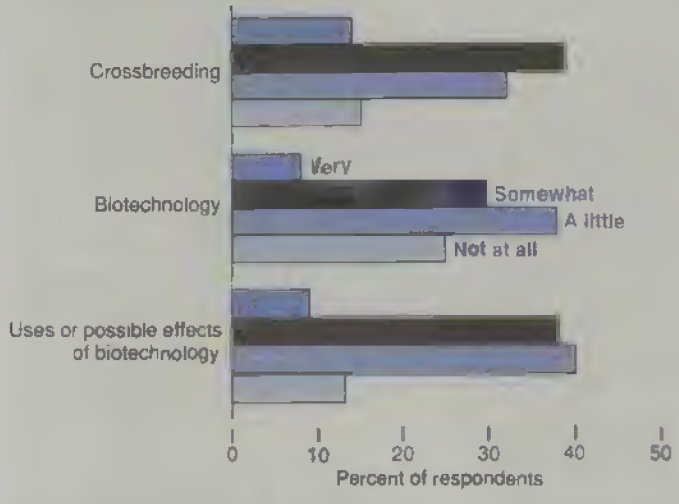
Expectations Are High

In the spring of 1992, 1,228 people over age 18 were interviewed by researchers at North Carolina State about knowledge of and attitudes toward the use of biotechnology in food production. The sample was designed to be representative of the U.S. population.

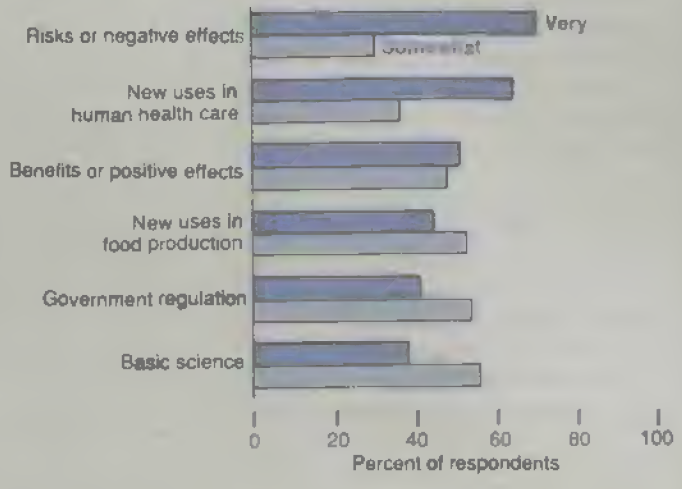
Initially, respondents were asked about traditional methods of crop and livestock improvement through breeding. Just over half had heard or read about crossbreeding; almost as many reported little or no awareness. About 40 percent had heard or read more than a little about the general term "biotechnology." When the interviewer mentioned specific applications of biotechnology, awareness rose to about 50 percent.

Consumers Were Asked . . .

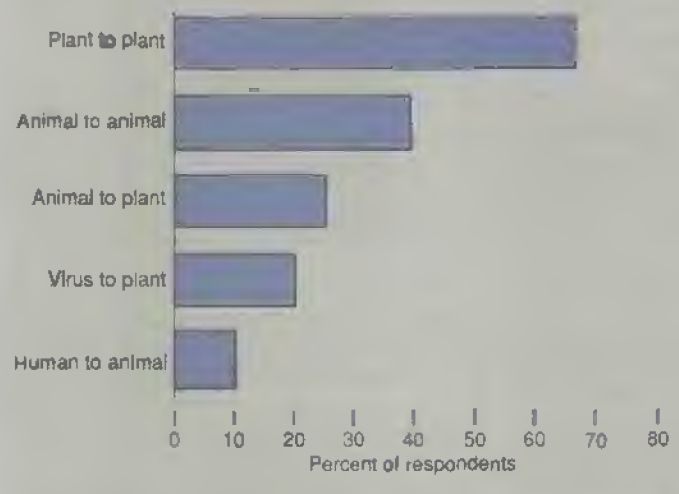
How Familiar with Technologies ?



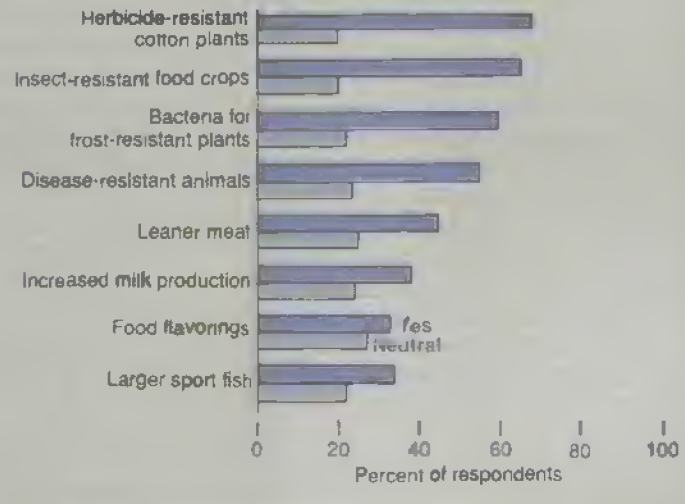
Information on Specifics—How Important?



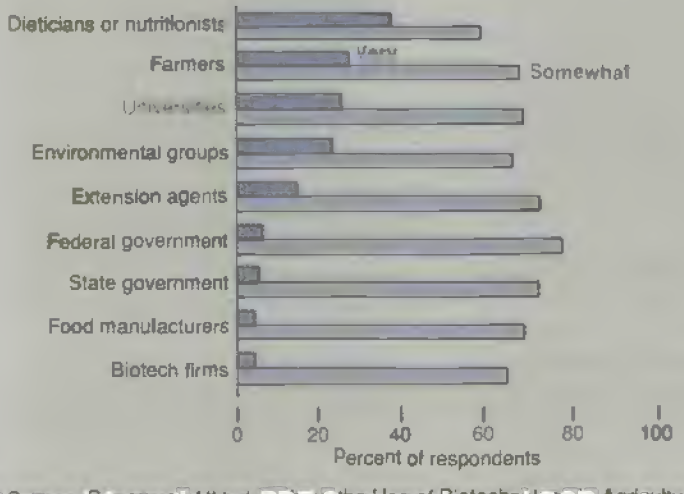
Transfers of Genetic Material—Acceptable?



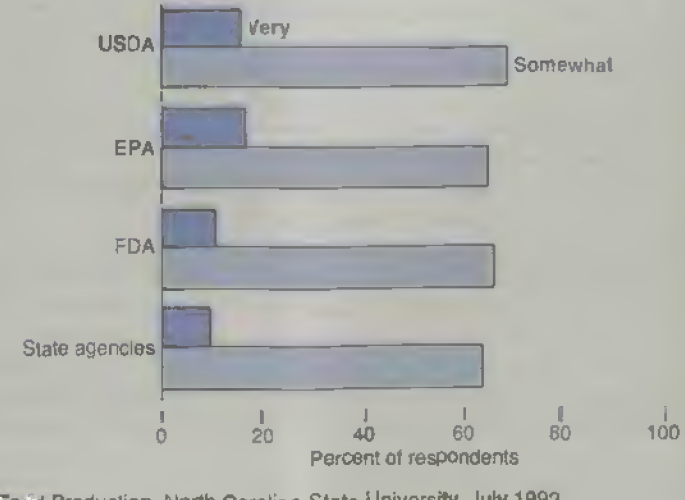
Genetic Engineering for Specific Uses—Acceptable?



Sources of Information—How Trustworthy?



How Confident in the Biotechnology Regulators?



Source: Biotechnology, Public Use of Biotechnology, Agriculture and Food Production, North Carolina State University, July 1992.

Most appeared fairly positive about the general concept of biotechnology. To the question: "Overall, would you say you support or oppose the use of biotechnology in agriculture and food production?" almost two-thirds responded they would support it.

Expectations of potential benefits appear high: 66 percent agreed and 5 percent strongly agreed with the statement "Biotechnology will personally benefit people like me in the next 5 years." More than two-thirds agreed or strongly agreed that "Government should fund more biotechnology research because of the potential benefits."

When Is Biotechnology Acceptable?

Over half of the survey respondents rated the use of biotechnology for each of the following purposes as acceptable: cotton plants that resist damage from the use of weed control chemicals, food crops that resist insect damage, bacteria that prevent frost damage to crops, and farm animals that resist disease. Other applications of biotechnology appear to be less acceptable: compounds that increase milk production when given to dairy cows, food ingredients such as flavorings, and sport fish that grow larger.

Acceptance of food products that involve the transfer of genetic material varies depending upon the source of the genetic material. Two-thirds of respondents said that potatoes made more nutritious through biotechnology would be acceptable if genes came from corn (plant-to-plant transfer), but only a quarter said that they would be acceptable if the new genes came from an animal.

Only 20 percent said that use of genetic material from a virus to make tomatoes better tasting would be acceptable. Almost 40 percent said that chicken made less fatty through biotechnology would be acceptable even if genes were added to the chicken from another species of animal. Only 10 percent said that use of genes from a human to alter animals (technically feasible) would be acceptable.

Many consumers believed that use of biotechnology in either animal or plant applications was "morally wrong." Almost a quarter said the use of biotechnology to change plants is morally wrong, and more than half said the same about altering animals.

Consumers Want To Know More

About two-thirds of the population sample said that they had considerable, or at least some interest in learning more about biotechnology. Of those indicating any interest, two-thirds felt it would be "very important" to have information about the potential risks or negative effects of biotechnology.

Just under two-thirds indicated it would be very important to have information about new biotechnology use in human health care. About half felt information about new uses of biotechnology in food production, and about how government regulates biotechnology, would be very important. Information on the basic science behind biotechnology was considered the least important. However, even in this case over one-third said this information would be very important and over half responded it would be somewhat important.

Some sources of information about biotechnology are seen as more trustworthy than others. Dieticians and nutritionists were viewed as the most credible source of information. Biotech companies were viewed with the least trust. Over a quarter of respondents said they had no trust in statements made by food processors and manufacturers and companies making biotechnology products.

Confidence Requires Education

Consumers' acceptance of food produced through biotechnology could be substantially enhanced through university-based educational programs aimed at explaining biotechnology in ways that consumers can understand. The goal of education should be to help consumers make choices about biotechnology based on sound information. Such education must go beyond technical information or even the benefits of certain applications. An extensive educational effort should cover food production, biology, risk management, public policy, and public oversight of biotechnology.

But science-based educational programs may not be very effective or even appropriate when attitudes are based on fundamental moral beliefs or values. The impact of education may also be limited by lack of confidence in government or distrust of information sources.

Education about biotechnology applied to agriculture and food production is part of a much larger educational need. Today, most American consumers take their food supply for granted until they perceive a problem. As technology has become more complex, consumers have become increasingly apprehensive about the safety of their food.

Consumers should be made aware of the historical and technical context of biotechnology and other types of food production technologies. Public awareness of traditional agricultural practices such as crossbreeding is limited, and some consumers confuse the use of biotechnology with the use of pesticides and other chemical technologies.

Finally, not all products of biotechnology will be evaluated equally. Acceptance of biotechnology appears to vary depending on the nature of the application, including the perceived benefits and risks of each. Scientists and decision makers should more carefully consider consumer response to different applications prior to the development and introduction of products into the market. And consumer education should be based on detailed assessment of consumer attitudes and knowledge.

[Thomas J. Hoban, Extension Sociology Specialist, North Carolina State University (919) 515-2670] AO

Food Manufacturing: The Long View

The U.S. food manufacturing industry has evolved into the most diverse, most efficient, and safest in the world. No other country has the capability of delivering a broader array of quality products and responding to changing consumer tastes in a more cost-efficient manner. A myriad of factors is responsible, but the pivotal one is a market-based food production system.

Two of the food industry's key assets are the rapidly changing technological developments in food production and a unique ability to communicate with the consumer. Technical improvements are reflected in part by the 35,000 new food products introduced in each of the last 2 years. The new technologies include ways to replace fat in animal products by oat or other grain derivatives, methods of more effectively developing good-tasting foods that can be microwaved, new forms of packaging that are more appealing to consumers, and continued improvements in the taste of all foods.

Effective consumer communication includes more sophistication in taste panels and test marketing, mass advertising to herald the attributes of new food products, and the ability to use food labels to inform consumers of nutritional benefits. Additionally, a variety of private and public groups and institutions regularly helps educate the public on the latest developments in nutritional research.

Currently, nearly every phase of the food industry is undergoing dramatic change. In fact, if there has been one constant in the food sector, it has been change. Each of the past five or six decades has brought the need for adjustments in the food industry; the 1990's are proving to be no exception.

Impacts of The Economy

The slow growth of the economy over the past 4 years has had a negative impact on consumer demand. The impact of the weak economy has likely been exaggerated by sharply increasing health care costs. Since 1970, health care costs have grown from about 6.5 to nearly 14 percent of disposable income while food expenditures have declined from nearly 15 to 11.5 percent of income. The tradeoff may not be direct, but food expenditures have undoubtedly been negatively impacted by growing health-related expenses as well as by the overall weak economy.

The rate of increase in food expenditures has trended downward since 1982. Real food expenditures (adjusted for inflation) have actually declined since 1990. Restaurant sales have not increased in constant dollars since 1988, and total deflated grocery sales for food have declined since 1989.

Some weakness in the economy will likely persist beyond this year. But the situation could brighten after 1993 as the deficit becomes more manageable and expected monetary and fiscal stimulus by a new Administration begins to energize the economy. Demand can be expected to shift toward "away from home" eating as well as toward more income-sensitive food products. Total consumer expenditures for food in real terms ought to stabilize in 1993 and begin to recover somewhat in 1994 and beyond.

Convenience & Club Shopping

Other changes in food consumption have been due at least partially to the economy. Grocery distribution channels have shifted. Since 1990, warehouse and club stores have increased their share of the grocery business from less than 3 to 15 percent, while supermarket share declined from 67 to 50 percent.

The mix of food purchased is also changing, but the driving force is difficult to identify. For example, demand for some premium brands in frozen foods and other areas has been somewhat weak over the last 2 years, as one might expect in a weak economy. However, business in the deli case has been brisk. And private-label sales have been weak during the recession—the reverse of expectations.

Margins in the basic meat and poultry processing business have been depressed, even though volume has been growing sharply. Red meat sales have been adversely affect by the generally weak economy, as well as growing competition from lower priced and expanding poultry supplies.

New Processes, Products, Packaging

Technical progress has affected the food industry from many directions. Genetic advances have enhanced crop and livestock productivity. Manufacturing cost reducuions have been realized by labor-saving equipment, better communication and accounting, computer hardware and software, and more efficient distribution techniques. Packaging advances will enhance food quality and safety while attempting to reduce the volume of nonrecyclable materials.

Three developments in particular should advance technological progress in the intermediate term. Labor cost increases may accelerate in anticipation of a

stronger economy, affecting wage rates and perhaps more regulations under a different Administration. Pressure to utilize labor-saving technologies will increase, as labor becomes more expensive relative to capital.

Vertical integration will continue in the red meat industry. Production of leaner, more uniform cattle and hogs can generate efficiencies in the production, marketing, processing, and retailing of meat products. As yet, there are no examples of a fully integrated system in place to utilize all of the potential efficiencies, but that day is drawing nearer.

Finally, we expect continued advancement in processes to replace fat and sodium in foods, particularly processed meats and dairy products that will meet both health and taste criteria. Over the longer term, fat substitutions will have a positive impact on the demand for meat and dairy products.

The Price of Regulation

Regulation is a major factor in the cost of production and consequent food costs to the consumer. Today, food regulation is a moving target. New labeling regulations for the food industry mean some 700,000 labels must be redone and 700,000 foods tested extensively for content of various ingredients in order to meet the new requirements. This represents a one-time cost of several billion dollars to the food industry.

Food safety legislation represents another area of potential major increases in food costs from two major sources. The Delaney clause, which specifies a zero-risk standard for cancer-causing additives in manufactured food, was enacted into law when the scientific community had the ability to measure products at about one part in only 100,000. Now, with the ability to measure one part in a trillion (about a grain of salt in a swimming pool), zero-risk implies distilled water and sterile food.

Modern science requires new legislation. Unless a negligible-risk standard is defined, potential cost increases to the food industry and consumers are huge. Zero-risk enforcement would eliminate the manufacture of many foods, would close many smaller food companies, and could even result in lower quality, unsafe food.

A related major potential cost is a tendency for states to develop their own food safety and labeling requirements. The cost of manufacturing specific products for specific states would be prohibitive. The food system needs sound, scientific federal food regulation, and federal preemption for labeling and food safety requirements.

Changes in Tastes & Preferences

Consumption patterns have changed rapidly in the last 20 years. Some trends in consumption are consistent with consumer attention to nutritional concerns, but the influence of nutritional interest is difficult to measure. Other factors like convenience, demographics, and the taste appeal of certain food ingredients result in somewhat contradictory consumption patterns.

Since 1970, consumption of products like cereals, fruits and vegetables, juices, poultry, and seafood have grown rapidly. Consumption of sugar, coffee, and high-cholesterol foods like eggs have declined. More recently, the appeal of frozen meals, meats, cheeses, soups and other products that are low in fat, cholesterol, and sodium has been strong. These trends are consistent with consumers' health concerns.

On the other hand, consumption of fats, some sweeteners, and soft drinks have also been growing rapidly, as well as fast-food consumption. These trends correspond to the concern for taste and convenience and likely imply that consumers will generally not sacrifice taste for nutrition.

Two parallel patterns of food consumption that appear very likely to continue are increasing demand for more convenience and increasing demand for more nutritious foods. First, the trend towards more nutritious foods will likely continue as long as the industry is able to communicate properly with consumers. Technology to reduce fat and sodium will expand to a broader spectrum of foods, with no loss of taste. One might also expect fiber content to continue as a nutritional issue as more research uncovers cancer-fiber relationships.

Second, demographics and lifestyles (notably time pressures on two-worker families) will place more emphasis on convenience foods. Expect a broader array of products to be adapted to the microwave as research and development dollars are spent in this area. Finally, as mentioned earlier, consumers will not abandon taste, so the future should continue bright for meat products, as well as sweeteners and foods lower in saturated fats.

Nutritional developments will continue to attract considerable press and public attention. Future trends will likely continue to reflect some contrdictions in consumption patterns. Demand for more nutritious food in terms of lower fat, lower cholesterol, lower salt, and more fiber will likely persist, as long as taste is not compromised.

[Richard Gady, Vice President, Public Affairs and Chief Economist, ConAgra, Inc. (402) 595-4015] AO

Agenda for Rural America In the 1990's

Rural America is wrestling with fundamental changes in the world economy and its role within it. The rural economy, and its natural resource industries in particular, have experienced progress during this century that can only be described as amazing. Farms that once utilized enormous human resources have been restructured into a sector that now produces large surpluses of food and fiber with far lower levels of inputs.

If the rural economy's principal industries no longer demand huge amounts of labor, we are left with the question of what to do with that labor. Labor by another name, after all, is the people of rural America.

Solutions to this challenge have not come easily. In the first place, rural problems are not well understood. Many, for example, cling to the mistaken belief that changes in farm policy can be effective in promoting general improvements in the rural economy, but fewer than 1 rural worker in 10 is employed on-farm, and the vast majority of agricultural processing occurs outside rural America.

Nor has the federal bureaucracy proven itself able to find efficient solutions. Programs are designed and administered to meet specific needs that are not common to all rural communities. The result is a system of isolated actions that adds up to an ill-focused and fragmented federal response.

The federal government, of course, is not solely responsible for rural development. Other participants include the states, local governments, and the private sector. The states in particular are major players in this arena, and their responsibility has been growing in recent years. Even more critical is the role of local governments in creating a supportive climate, providing leadership, and taking local initiative in promoting community development and growth.

The Task Ahead

In rural development as in all of government, the journey ahead is still long. A major agenda item for the U.S. is to establish new styles of government operations to meet the emerging challenges of the 21st century. It is critical to our future success that we get on with this agenda.

We need a new national vision of roles and responsibilities for rural America, for what we want rural America to be. Times have changed in rural America, in some places so radically that it is unthinkable that the future will resemble the past. But our concepts about rural America and what it can become are still grounded in ways of thinking that are no longer valid. The new vision must be created, unleashing creative energies on behalf of rural America.

What is called for is to manage national policymaking for rural development that channels efforts in creative directions, and strengthens the collaborative relationships between the federal government and its partners. The State Rural Development Councils have been a remarkable success in the latter regard. By bringing senior officials together from time to time they have opened up channels of communication that bureaucracy and "turfism" have kept closed.

But the federal government and its partners must do more than talk with each other. They must develop shared visions and strategies. And they must learn to work cooperatively, not competitively, if scarce national resources are to be used to greatest effect to enhance the longrun competitive position of the U.S. in the global economy.

Flexibility is needed to meet complex and varied needs, encourage a willingness to experiment, and learn from mistakes. Difficult as it can be for government leaders to admit less than total success, trying and trying again is the best teacher.

Finally, the base of knowledge and information about rural America must be improved. Perhaps the most important lesson concerns diversity—the complexity of rural needs and the unique situations that exist in many parts of rural America. But the level of knowledge about the rural economy, or the changing conditions within the rural population, is appallingly poor.

The U.S. has invested large amounts of resources in certain industries—especially in learning minute details about the agricultural industry. But we know almost nothing about the changes taking place in textiles or metal working or electronics, and how these changes give rural citizens new opportunities or threaten them with difficult changes. It is time to redirect resources to develop a base of relevant information and applied knowledge that will inform policies for rural development.

The task ahead calls for bucking tradition, refocusing government, and defining new visions of the nation and where it should be headed. Bureaucracies must be given new methods of carrying out the business of governance, and investments must be redirected to program areas that offer higher payoffs in building a stronger future. The real question to be answered is this: Do we have the will? Only time will tell.

[Walter E. Hill, Deputy Under Secretary, Small Community and Rural Development, USDA] AO

Rural Development

Some Lessons Of Canadian Rural Policy

Growing economic integration between Canada and the U.S. is inviting comparison of economic policies of the two countries. Similarities between rural conditions in Canada and in the U.S. are striking, suggesting that policies to improve the condition of rural areas might also be similar.

Agriculture remains the dominant land use in the habitable portions of each nation, even though it is no longer the principal rural economic activity. Both economies, including the rural sections, are dominated by service activities and, to a lesser degree, manufacturing. And levels of rural income and employment persistently lag behind those in urban places.

Poverty is an equally pervasive problem in rural Canada as a percentage of the rural population, but rural poverty is a smaller proportion of total poverty in Canada than in the U.S. Rural residents in both countries tend to have lower quality education systems, less access to services such as health care, and tend more often to fall between the cracks in terms of coverage by basic social programs.

Most importantly, both Canada and the U.S. are large countries with a wide regional diversity in terms of economic and social conditions and the resulting problems and potential.

Different Approaches

Despite similarities in economic development and rural problems, important differences exist in the role of state and individual in the two societies. Canada's institutional structure allows a greater role for government in managing resources and directing the path of development. The Canadian health plan is one example of this difference, as are federal ownership of half the rail system, compulsory marketing boards for a number of major agricultural products, and a more aggressive role by government in activities that can roughly be termed industrial planning.

The distribution of government authority also differs. Canadian provinces have more direct power than states, and the federal government in Canada has had far less success than the U.S. in bypassing the next level of government and dealing directly with citizens and local governments. In rural areas in Canada there is no strong federal presence like the Cooperative Extension Service that would allow program delivery at the local level, even if the federal government were able to develop one. Moreover, the power of the federal government in Canada will likely be further diluted in an effort to placate provinces and preserve national unity, making a dominant federal role even less likely.

The effect of these differences on rural policy has been significant. In terms of specific programs to assist rural areas in the two nations, there is great similarity. This reflects the common nature of the problems and the simple fact that there are a finite number of measures that can be taken to address them. Where significant differences exist is in the policies that blend individual programs into broad strategies.

Perhaps the single element that best characterizes the differences in approach between the two nations is that Canada's rural policy is a small component of broader regional policy to provide assistance through generally available programs. U.S. rural policy is mainly oriented to rural businesses and communities.

Canada's Self-Help Program

A federal program for rural development in Canada that began in the late 1980's may be worth watching as future directions for U.S. rural policy are contemplated. The Community Futures (CF) program, operated by Employment and Immigration Canada, is a locally based self-help program that motivates individual communities to plan strategically for economic development.

CF is targeted to small, often single-industry towns, giving it a relatively strong rural slant. The federal government provides funds both for planning and for business and infrastructure development. The program carries out two broad thrusts of Canadian policy; comprehensive planning for development, and the use of unemployment insurance as the entry point for the federal government in domestic economic development.

The objective of the Community Futures program is to develop resources within a community to make it self sustaining. Resources include capital, planning skills, infrastructure, and labor skills. Initial infusions of federal assistance in the form of funds and technical assistance are viewed as seed capital that allow the community to begin the growth process. Committees drawn from the local community provide core leadership and direction. Federal assistance is justified on the grounds of providing opportunity, and as a long-term budget saving activity if unemployment claims are reduced.

Canada's CF program recognizes that simply providing large transfer payments to individuals in a region is not sufficient. Once the transfers are withdrawn, a local economy generally collapses. Although the Community Futures program provides significant amounts of federal financial assistance, it also supplies technical aid. Most importantly, it requires that the community organize to develop a coherent strategic development plan that has broad popular support, and commit itself to implementing the plan over a 5- to 10-year period. This in turn requires the federal government to make a similar time commitment to the community.

Community Futures also reflects the emerging notion that development calls for a series of public-private partnerships in which various players pool their resources to create the critical mass necessary for growth. The critical question is how to create the network of partnerships.

In the 1970's and early 1980's the Canadian government relied on federal-provincial partnerships to deliver development assistance. Experience showed that while partnerships at this level can deliver programs to communities, they do not usually result in ongoing growth. The Community Futures program represented the first significant effort by the federal government to form partnerships with local leaders.

Significantly, the program does not rely on local elected officials for its contact with the community, although a number of the community board members are often elected officials. More recently, a number of provincial governments have tried to bring about partnerships for development, in part to ensure that the federal government is precluded from a greater role in dealing with local governments.

An underlying objective of the CF program was to develop stronger links between business and community leaders, and between clusters of communities that were functionally integrated. In this respect the program has been quite successful. New alliances formed at a local level in many communities because federal government funding provided through the Community Futures program provided an impetus for cooperating and a forum for building cooperation.

This suggests that while local partnerships are necessary for successful development, it may take an external force to bring about these partnerships. Moreover, the outside stimulus needs to be sustained for a long enough period to ensure that the new behavior patterns take root.

Can the U.S. Draw from Canada's Experience?

Canada's past and current experience with rural development programs has shown that national rural economic development strategies—designed to provide uniform programs to all parts of the country—miss the mark. What is needed on the east coast is not what is needed in the Great Lakes area. In both countries there is growing understanding of the importance of recognizing regional diversity in developing programs.

Also clear from the Canadian experience is that simply providing a source of revenue may not be enough to bring the province to address root problems. Nor do expanded transfer payments to individuals necessarily have a long-term effect in reviving local economies. Canada's experience in the 1980's suggests that local economies based primarily on federal transfer payments do not create the internal dynamics to survive reductions in those payments.

The Community Futures program, on the other hand, suggests that sustained support of locally based development can be successful. Comprehensive long-term assistance in planning and implementation of development strategies is too often given only lip service in both countries. But the little that we know about successful rural development suggests that it is the appropriate way to go.

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Canada and the U.S.: Similar Rural Profiles

	Canada	U.S.
	Percent	
Population (1986)		
Percent rural	23.0	23.2
Percent farm	4.0	2.2
Unemployment rate (1989)		
Rural	8.8	5.7
Urban	7.1	5.2
Employment growth rate (1986-89)		
Rural	4.5	6.9
Urban	10.4	7.2
Share of rural employment by sector (1989)		
Agriculture	12.0	9.0
Manufacturing	17.0	18.0
Services	28.0	26.0
Rural share of poverty (1986)	7.0	29.0
Proportion below poverty line*		
Large urban	20.0	16.7
Small urban	19.0	8.0
Rural	17.0	16.3
Educational level		
Some postsecondary (1988)		
Rural	25.0	34.0
Urban	32.0	52.0
Less than high school (1988)**		
Rural	21.0	28.0
Urban	14.0	20.0
Average family income (1990)		
Rural	36,700	23,709
Urban	41,000	31,823

*For Canada "large urban" refers to cities larger than 50,000; "small urban" is cities less than 50,000. In the U.S., "large urban" refers to the central core of metropolitan areas; "small urban" is the non-core area.

**In Canada the data are for below grade 9; in the U.S. below grade 11.

Farm Lending Beyond the 20th Century

The economic landscape of rural America and of farming is rapidly changing in response to the internationalization of markets and the urbanization of economic activity. The nation's agricultural sector and the institutions serving it are no longer separate and unique. In many respects, the application of new technology by producers, input suppliers, and processors seems to be irretrievably absorbing the sector into the broader landscape of U.S. economic activity. These changes appear to have picked up tempo in the last three decades.

The outlook for agricultural lending is conditioned by the expected performance of the broader U.S. economy. The implications for lenders are drawn from changes both in their customer base and in the functioning of the lending business.

For a number of reasons, the U.S. economy is experiencing the weakest economic recovery in post-World War II memory. GNP growth in the first six quarters of expansion following the latest downturn has fallen far behind average of the past eight recoveries. Unemployment remains high and continues to be a drag on consumer confidence.

High levels of public and private debt have limited the capacity of consumers and firms to spend. Indeed, primary attention has focused on reliquifying the assets both of households and business firms. Once that is accomplished, the stage may be set for a prolonged expansion.

Farmers To Protect Profit Spread

Farmers will become much more attuned to managing a profit spread and less oriented toward managing around intermittent boom years. Like their urban counterparts, farmers will focus on creating a profit spread and will then work to insulate it from external volatility. Much more attention will be paid to cost containment and setting the cost structure on a predictable course.

Product pricing strategies will protect the profit spread but will leave upside price opportunities open. Price risk will receive greater attention and will be managed consistently with the farm's financial ability to bear risk. The usually narrow, and perhaps further narrowing, profit margins in agriculture place a high premium on successful management.

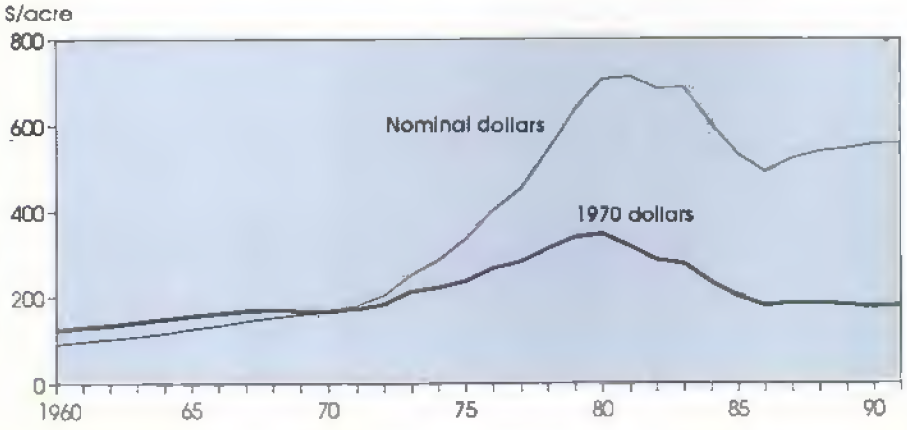
Land No Longer A Store of Wealth

Since the opening of the American frontier, farmers have looked to land as a store of wealth. In the post-World War II period, land ownership became an even more important creator of wealth.

But farmers have often overestimated the effect of land ownership on wealth. Real U.S. farmland values have increased only 47 percent from 1960 to 1991—an average of less than 1.6 per year. Moreover, currently high real interest rates—which had approached zero as inflation accelerated in the 1970-82 period—decrease incentives to invest in land. Farmers are learning that farmland may no longer build wealth, particularly when a substantial proportion of debt capital is used in the acquisition.

Farmers now understand that in a noninflationary environment and in a world with relatively abundant food supplies, land is not necessarily a growth asset. Instead, good seed, profit-maximizing fertilizer and pesticide programs, and equipment management programs can all produce higher returns on investment than land ownership. Many expect this scenario to be reflected in a growing proportion of U.S. farmland leased by those who farm the land, although that is not yet in evidence.

Farmland Values Show Little Real Growth



Much of agricultural lending is supported by security interests in land and equipment. As farmers—and especially newer entrants into farming—devise and rely more on methods to control rather than own production assets, lenders will be forced to rethink their credit products, underwriting standards, and sources of security. Prototypes will be found more frequently by looking to practices developed outside agriculture than by reexamining past practices in agricultural lending.

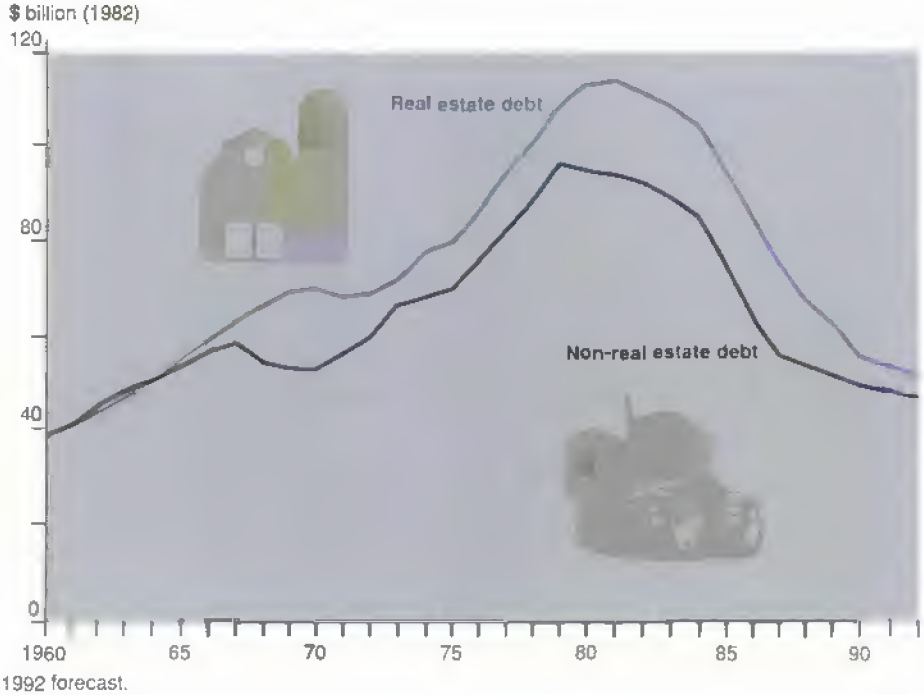
Additionally, farmers are managing control of equipment differently. First, they are extending its useful life by improved maintenance. Tractors of 10-20 years of age that still perform well are now common on farms. Second, farmers and agribusiness firms are using lease financing and rental much more frequently, with about double the value of such leases outstanding in the 1980's.

Large-Scale Farming Needs Large-Scale Credit

Scale and specialization in U.S. agriculture have changed markedly. That has led to a bifurcation of farm size; many farms are small, and a few are very large. About 71 percent of all farms produce less than $40,000 each in annual sales and often lose money. Most family income of the small farmers comes from off the farm. Only about 5 percent of U.S. farms sell over $250,000 annually. But large farms produce the bulk of the nation's food and fiber, and the large farms capture most of the sector's net cash income.

Generational transfers now appear much more likely to utilize family assistance or outside equity funds for financing. The scale of farming required to meet family living expenses and debt retirement typically far exceeds the resources of a new entrant. Off-farm income by one or both spouses will become increasingly common. Data on debt-bearing capacity in farming tend to affirm that only especially profitable or otherwise unique businesses can comfortably carry more than about 40 percent debt. Higher debt-asset ratios pose high and often prolonged exposure to business failure.

Farm Debt Drops to More Manageable Levels in the 1990's



1992 forecast.

It All Adds Up— Common Farm Finance Terms

Current and constant dollars – *Current dollars* measures purchasing power in the prevailing year, but when the effects of inflation are omitted, current dollars cannot be meaningfully compared over time. *Constant dollars* accounts for these inflationary effects. Constant dollars uses a 1982 base and may also be referred to as a real, or inflation-adjusted measure.

Net cash income = Gross cash income less cash expenses. Net cash income measures the total income received in a year, regardless of the year in which the marketed output was produced. It measures funds available to cover cash operating costs, to finance capital investments and savings, service debts, maintain living standards, and pay taxes.

Net farm income= Total gross farm income less total expenses. Net farm income measures the profit or loss associated with a year's production. Additions to inventory are treated as income, and nonmoney items such as depreciation, consumption of farm-grown food, and the net imputed rental value of operator dwellings are included.

Farm equity – Measures net worth. Farm equity is calculated as farm sector assets minus sector debt outstanding.

Debt/asset ratio – Calculated as total debt outstanding on January 1, divided by farmers' estimate of the current market value of owned assets of the farm business.

Competition Increasing Among Lenders

Farmers have reduced their leverage to more manageable levels. In real terms the agricultural sector's non-real estate indebtedness peaked in 1979 and has fallen sharply since then. Real estate indebtedness peaked in 1981, also falling since the high point. Farmers are not likely to use debt aggressively in the near term, unless the economic environment changes fundamentally. Thus, lenders wishing to add farm loans to their portfolio must bid aggressively against other lenders by offering specialized credit products and competitive interest rates.

There is substantial excess capacity among agricultural lenders. Agricultural banks across the nation have a loan-to-deposit ratio of only 54 percent, far lower than the 80 percent posted for all commercial banks. Farm Credit Associations also face a competitive environment as they try to add good loans to their portfolios.

Introduction of risk-based capital into commercial banking and the Farm Credit System institutions means fewer differences in the regulatory climate between agricultural and nonagricultural lending. Greater uniformity in examination procedures and objectives across lending systems also implies more uniformity of regulatory treatment. The presence of the Federal Agricultural Mortgage Corporation (Farmer Mac) will eventually enhance uniformity in underwriting standards since lenders must meet them in order to do business in the secondary market for agricultural real estate mortgages.

Across categories of lenders, however, the regulatory playing field will remain uneven. Indeed banks, farm credit institutions, and insurance companies may find themselves at a growing disadvantage compared with a variety of financial service firms or the finance arms of agribusiness firms. These firms typically function under a very different and more flexible regulatory regime. As a result, they have been taking business from insurance companies and depository institutions, including commercial banks.

Additionally, many agribusiness firms—Pioneer and Deere, for example—are able to use credit services to smooth production schedules, and to link customers more closely to the firm in order to cross-sell products. Thus, these firms may not require the same rate of profitability as transitional lenders. Nontraditional competitors like these can be expected to cause marked changes in both numbers and business procedures of traditional lenders.

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January Releases from USDA's Agricultural Statistics Board

The following reports are issued at 3 p.m. Eastern time on the dates shown.

January

5 Dairy Products
Poultry Slaughter
6 Broiler Hatchery
8 Egg Products
12 Cotton Ginnings
Crop Production
Crop Production–Annual
Grain Stocks
Rice Stocks
Winter Wheat & Rye Seedings
13 Broiler Hatchery
14 Milk Production
Potato Stocks
Turkey Hatchery
15 Turkeys
Vegetables
Vegetables--Annual
21 Broiler Hatchery
Catfish Processing
Noncitrus Fruits & Nuts--Preliminary
22 Cold Storage
Livestock Slaughter
25 Cotton Ginnings
Crop Values
27 Broiler Hatchery
Peanut Stocks & Processing
28 Eggs, Chickens & Turkeys
Layers & Egg Production--Annual
29 Agricultural Prices
Cattle on Feed
Sheep & Lambs on Feed

February Releases from USDA's Agricultural Statistics Board

The following reports are issued at 3 p.m. Eastern time on the dates shown.

February

1 Catfish Production
3 Broiler Hatchery
Egg Products
Poultry Slaughter
4 Dairy Products
5 Cattle
Sheep & Goats
10 Broiler Hatchery
Cotton Ginnings
Crop Production
12 Potato Stocks
Turkey Hatchery
16 Milk Production
17 Broiler Hatchery
Farm Labor
18 Cold Storage–Annual
19 Cattle on Feed
Honey
Livestock Slaughter
22 Catfish Processing
Cold Storage
23 Eggs, Chickens & Turkeys
24 Broiler Hatchery
26 Agricultural Prices
Peanut Stocks & Processing

Statistical Indicators

Summary Data

Table 1.—Key Statistical Indicators of the Food & Fiber Sector

	1991	1992					1993		
	Annual	I	II	III	IV F	Annual F	I F	II F	Annual F
Prices received by farmers (1977=100)	146	141	141	138	138	140	--	--	--
Livestock & products	161	154	156	159	159	157	--	--	--
Crops	130	127	124	117	117	121	--	--	--
Prices paid by farmers, (1977=100)									
Production items	173	171	174	175	174	174	--	--	--
Commodities & services, interest, taxes, & wages	169	188	189	189	189	189	--	--	--
Cash receipts ($ bil.) 1/	168	166	168	--	--	--	--	--	--
Livestock ($ bil.)	86.3	85	87	--	--	--	--	--	--
Crops ($ bil.)	81.8	81	81	--	--	--	--	--	--
Market basket (1982-84=100)									
Retail cost	137	138	138	138	--	--	--	--	--
Farm value	106	102	103	104	--	--	--	--	--
Spread	154	158	157	156	--	--	--	--	--
Farm value/retail cost (%)	27	26	26	26	--	--	--	--	--
Retail prices (1982-84=100)									
Food	137	138	138	138	139	138	--	--	--
At home	136	137	137	137	137	137	--	--	--
Away from home	138	140	140	141	142	141	--	--	--
Agricultural exports ($ bil.) 2/	37.5	11.3	10.1	9.7	11.3	42.4	11.3	10.1	41.5
Agricultural imports ($ bil.) 2/	22.6	6.1	6.2	6.2	5.8	24.3	6.1	6.2	24.0
Commercial production									
Red meat (mil. lb.)	39,402	10,086	9,915	10,405	10,487	40,893	10,249	10,286	41,929
Poultry (mil. lb.)	24,885	6,309	6,624	6,816	6,570	26,319	6,530	6,885	27,195
Eggs (mil. doz.)	5,758	1,458	1,451	1,463	1,505	5,876	1,460	1,440	5,855
Milk (bil. lb.)	148.5	38.0	39.1	37.7	36.9	151.7	38.2	39.4	151.9
Consumption, per capita									
Red meat and poultry (lb.)	203.2	50.7	51.4	52.8	54.0	208.9	52.0	52.7	212.7
Corn beginning stocks (mil. bu.) 3/	--	1,521.2	6,541.1	4,561.0	2,738.6	--	1,100.5	--	--
Corn use (mil. bu.) 3/	7,760.7	2,461.1	1,984.5	1,827.8	1,841.4	7,914.9	--	--	8,335.0
Prices 4/									
Choice steers--Neb. Direct ($/cwt)	74.28	75.77	75.94	73.88	75-76	75-76	70-76	72-78	71-77
Barrows & gilts--IA, So. MN ($/cwt)	49.69	39.55	45.7	44.39	42-43	43-44	38-44	40-46	39-45
Broilers--12-city (cts./lb.)	52.0	50.2	52.3	54.5	54-55	52-53	50-56	50-56	50-56
Eggs--NY gr. A large (cts./doz.)	77.5	63.8	62.0	64.5	71-72	65-66	63-69	65-71	69-76
Milk--all at plant ($/cwt)	12.24	12.97	12.87	13.47	13.15-13.35	13.10-13.20	12.25-13.25	11.25-12.25	11.80-12.80
Wheat--KC HRW ordinary ($/bu.)	3.18	4.50	3.94	3.45	--	--	--	--	--
Corn--Chicago ($/bu.)	2.47	2.66	2.59	2.26	--	--	--	--	--
Soybeans--Chicago ($/bu.)	5.69	5.75	5.93	5.49	--	--	--	--	--
Cotton--Avg. spot 41-34 (cts./lb.)	69.7	51.4	56.4	57.3	--	--	--	--	--

	1984	1985	1986	1987	1988	1989	1990	1991	1992 F
Gross cash income ($ bil.)	156.1	157.9	152.8	165.2	172.7	180.2	186.4	183.2	185
Gross cash expenses ($ bil.)	118.7	110.7	105.0	109.4	114.6	121.2	125.2	125.2	124
Net cash income ($ bil.)	37.4	47.1	47.8	55.8	58.1	58.9	61.3	58.0	60
Net farm income ($ bil.)	26.1	28.8	31.0	39.7	41.1	49.9	51.0	44.6	51
Farm real estate values 5/									
Nominal ($ per acre)	801	713	640	599	632	661	668	681	685
Real (1982 $)	769	657	568	518	530	533	517	506	491

1/ Quarterly data seasonally adjusted at annual rates. 2/ Annual data based on Oct.-Sept. fiscal years ending with year indicated. 3/ Sept.-Nov. first quarter; Dec.-Feb. second quarter; Mar.-May third quarter; Jun.-Aug. fourth quarter; Sept.-Aug. annual. Use includes exports & domestic disappearance. 4/ Simple averages. Jan.-Dec. 5/ 1990-92 values as of January 1. 1986-89 values as of February 1. 1984-85 values as of April 1. F = forecast, -- = not available.

U.S. & Foreign Economic Data

Table 2.—U.S. Gross Domestic Product & Related Data

	Annual			1991		1992		
	1989	1990	1991	III r	IV	I	II	III P
	$ billion (quarterly data seasonally adjusted at annual rates)							
Gross domestic product	5,250.8	5,522.2	5,677.5	5,713.1	5,753.3	5,840.2	5,902.2	5,982.5
Gross national product	5,266.8	5,542.9	5,694.9	5,726.4	5,764.1	5,859.8	5,909.3	5,993.1
Personal consumption expenditures	3,523.1	3,748.4	3,887.7	3,914.2	3,942.9	4,022.8	4,057.1	4,108.1
Durable goods	459.4	464.3	446.1	453.0	450.4	469.4	470.6	482.7
Nondurable goods	1,149.5	1,224.5	1,251.5	1,255.3	1,251.4	1,274.1	1,277.5	1,293.0
Clothing & shoes	200.4	206.9	209.0	212.0	206.8	216.5	217.4	224.5
Food & beverages	565.1	601.4	617.7	617.9	620.0	627.9	623.2	627.4
Services	1,914.2	2,059.7	2,190.1	2,205.9	2,241.1	2,279.3	2,309.0	2,332.4
Gross private domestic investment	832.3	799.5	721.1	732.8	736.1	722.4	773.2	786.4
Fixed investment	798.9	793.2	731.3	732.6	726.9	738.2	765.1	765.3
Change in business inventories	33.3	6.3	−10.2	0.2	9.2	−15.8	8.1	21.1
Net exports of goods & services	−79.7	−68.9	−21.8	−27.1	−16.0	−8.1	−37.1	−34.9
Government purchases of goods & services	975.2	1,043.2	1,090.5	1,093.3	1,090.3	1,103.1	1,109.1	1,122.9
	1987 $ billion (quarterly data seasonally adjusted at annual rates)							
Gross domestic product	4,838.0	4,877.5	4,821.0	4,831.8	4,838.5	4,873.7	4,892.4	4,939.4
Gross national product	4,852.7	4,895.9	4,836.4	4,843.7	4,848.2	4,890.7	4,899.1	4,949.0
Personal consumption expenditures	3,223.3	3,260.4	3,240.8	3,251.2	3,249.0	3,289.3	3,288.5	3,318.4
Durable goods	440.7	439.3	414.7	419.4	416.1	432.3	430.0	439.9
Nondurable goods	1,051.6	1,056.5	1,042.4	1,044.8	1,035.6	1,049.6	1,045.6	1,052.2
Clothing & shoes	187.8	185.9	181.3	183.7	177.5	184.1	184.4	191.0
Food & beverages	515.0	520.8	515.8	515.0	515.3	518.9	513.5	514.5
Services	1,731.0	1,764.6	1,783.7	1,787.0	1,797.4	1,807.3	1,812.9	1,826.3
Gross private domestic investment	784.0	739.1	661.1	672.0	676.9	668.9	713.6	728.9
Fixed investment	754.2	732.9	670.4	671.4	669.3	681.4	705.9	708.7
Change in business inventories	29.8	6.2	−9.3	0.6	7.5	−12.6	7.8	20.2
Net exports of goods & services	−73.7	−51.8	−21.8	−31.6	−20.5	−21.5	−43.9	−49.8
Government purchases of goods & services	904.4	929.9	941.0	940.2	933.1	937.0	934.2	941.8
GDP implicit price deflator (% change)	4.4	4.3	4.1	2.4	2.4	3.1	2.7	1.7
Disposable personal income ($ bil.)	3,787.0	4,042.9	4,209.8	4,227.6	4,284.9	4,360.9	4,411.8	4,430.9
Disposable per. income (1987 $ bil.)	3,464.9	3,516.5	3,509.0	3,511.5	3,530.8	3,565.7	3,576.0	3,579.2
Per capita disposable per. income ($)	15,307	16,174	16,658	16,706	16,885	17,143	17,297	17,323
Per capita dis. per. income (1987 $)	14,005	14,068	13,886	13,876	13,913	14,017	14,021	13,993
U.S. population, total, incl. military abroad (mil.) *	247.3	249.9	252.7	252.9	253.7	254.3	254.9	255.7
Civilian population (mil.) *	245.1	247.8	250.6	250.8	251.6	252.3	253.0	253.7

	Annual			1991	1992			
	1989	1990	1991	Oct	July	Aug	Sept	Oct
	Monthly data seasonally adjusted							
Industrial production (1987=100)	108.1	109.2	107.1	108.4	109.4	109.0	108.7	109.0
Leading economic indicators (1982=100)	144.4	143.8	143.6	145.2	149.1	148.6	148.5	149.1
Civilian employment (mil. persons)	117.3	117.9	116.9	116.9	117.8	117.7	117.7	117.6
Civilian unemployment rate (%)	5.2	5.4	6.6	6.8	7.6	7.5	7.4	7.3
Personal income ($ bil. annual rate)	4,380.3	4,664.2	4,828.3	4,889.3	5,046.9	5,054.7	5,079.1	5,130.2
Money stock–M2 (daily avg.) ($ bil.) 1/	3,227.3	3,339.0	3,439.8	3,417.9	3,466.2	3,471.6	3,481.9	3,496.5
Three-month Treasury bill rate (%)	8.12	7.51	5.42	5.03	3.28	3.14	2.97	2.84
AAA corporate bond yield (Moody's) (%)	9.26	9.32	8.77	8.55	8.07	7.95	7.99	8.10
Housing starts (1,000) 2/	1,376	1,193	1,014	1,085	1,100	1,233	1,243	1,229
Auto sales at retail, total (mil.)	9.9	9.5	8.4	8.3	8.3	8.0	8.3	8.3
Business inventory/sales ratio	1.53	1.53	1.55	1.52	1.49	1.51	1.50	—
Sales of all retail stores ($ bil.)	145.1	150.6	151.8	154.5	160.8	161.0	161.8	163.3
Nondurable goods stores ($ bil.)	90.8	96.0	98.0	99.1	102.2	102.7	102.9	103.4
Food stores ($ bil.)	28.8	30.2	30.9	31.8	32.3	32.6	32.3	32.6
Eating & drinking places ($ bil.)	14.5	15.2	15.8	16.4	15.9	16.3	16.5	16.5
Apparel & accessory stores ($ bil.)	7.6	7.9	8.0	7.9	8.7	8.6	8.7	8.8

1/ Annual data as of December of the year listed. 2/ Private, including farm. R = revised. P = preliminary. — = not available.
Note: * Population estimates based on 1990 census.

Information contact: Ann Duncan (202) 219-0313.

Table 3.—Foreign Economic Growth, Inflation, & Exports

	1983	1984	1985	1986	1987	1988	1989	1990	1991 E	1992 F	1993 F	Average 1981–90
	Annual percent change											
World, less U.S.												
Real GDP	2.4	3.6	3.4	3.0	3.5	4.4	3.5	3.1	0.9	1.3	2.2	3.0
GDP deflator	8.3	7.8	8.0	7.5	9.0	10.8	10.8	24.6	11.3	42.8	36.4	10.5
Real exports	2.2	9.5	3.9	2.1	5.9	7.8	8.7	6.4	3.8	3.1	3.8	5.3
Developed less U.S.												
Real GDP	2.1	3.2	3.4	2.7	3.2	4.5	3.6	3.5	1.4	1.1	1.5	2.9
GDP deflator	6.2	4.8	3.8	3.9	2.8	3.6	4.2	4.6	4.1	4.0	3.5	5.0
Real exports	2.7	10.6	5.4	–0.1	4.1	7.3	9.7	7.8	4.8	3.1	3.2	5.7
Eastern Europe & C.I.S.												
Real GDP	3.6	4.0	2.2	3.6	2.6	3.8	1.5	–3.2	–12.2	–11.2	–4.1	2.2
GDP deflator 1/	4.2	5.0	6.4	8.1	12.8	35.3	41.3	192.7	38.3	199.9	87.7	32.2
Real exports	4.6	6.2	–4.0	9.1	7.6	8.5	–5.3	–6.9	–22.1	–9.0	0.9	2.6
Developing												
Real GDP	3.1	4.7	4.0	3.9	4.5	4.4	3.6	3.5	2.5	4.6	5.3	3.7
GDP deflator	38.7	37.3	36.4	25.5	33.1	26.4	19.1	16.9	15.4	10.6	12.5	28.9
Real exports	0.4	7.2	1.7	7.5	11.1	9.4	9.0	5.5	6.2	5.3	6.1	4.9
Asia												
Real GDP	8.2	7.9	5.9	7.2	8.6	9.1	5.5	5.7	5.8	5.5	5.7	7.0
GDP deflator	6.3	7.5	5.9	4.4	7.8	8.2	6.1	8.1	7.2	7.2	7.2	6.7
Real exports	6.4	11.3	2.9	19.0	15.8	14.9	8.2	7.3	9.2	9.0	10.8	9.2
Latin America												
Real GDP	–2.7	3.7	3.6	4.4	3.0	0.0	1.3	–0.1	2.8	2.7	4.2	1.2
GDP deflator 1/	30.3	40.8	69.0	62.8	126.5	66.5	35.9	29.6	24.5	13.7	15.8	49.6
Real exports	2.0	12.0	2.0	0.0	8.0	6.8	10.4	3.9	3.1	2.5	2.1	5.2
Africa												
Real GDP	1.1	2.2	2.3	1.4	0.6	2.9	2.8	0.9	2.3	2.5	2.9	1.7
GDP deflator	16.7	12.2	12.2	8.4	25.3	17.4	19.5	15.3	18.0	13.8	16.9	14.5
Real exports	–5.3	–1.5	3.6	–1.0	0.0	2.9	5.0	7.5	6.1	1.7	1.5	–2.0
Middle East												
Real GDP	4.5	1.2	1.7	–3.6	–0.1	–0.2	2.5	5.8	–10.3	7.3	8.9	1.9
GDP deflator	–4.5	1.2	3.1	5.7	14.6	9.3	13.2	19.6	2.2	9.3	12.7	7.7
Real exports	–19.6	–6.7	–7.1	–3.8	24.6	4.8	21.0	5.0	17.2	10.9	34.7	0.1

1/ Excludes Yugoslavia, Argentina, Brazil, & Peru starting in 1989. E = estimate. F = forecast.

Information contact: Alberto Jerardo, (202) 219–0717.

Farm Prices

Table 4.—Indexes of Prices Received & Paid by Farmers, U.S. Average

	Annual			1991	1992					
	1989	1990	1991	Nov	June	July	Aug	Sept	Oct R	Nov P
	1977 = 100									
Prices received										
All farm products	147	149	146	139	140	138	139	138	139	137
All crops	134	127	130	124	122	117	117	117	116	115
Food grains	156	123	115	135	139	129	123	130	130	136
Feed grains & hay	128	123	118	116	124	117	110	109	105	104
Feed grains	123	118	115	115	122	115	108	107	101	99
Cotton	98	107	108	101	94	91	89	87	87	84
Tobacco	149	152	161	163	145	139	148	163	163	163
Oil-bearing crops	102	94	91	83	87	83	82	85	83	85
Fruit, all	194	188	268	217	194	153	162	159	157	170
Fresh market 1/	205	197	299	299	198	150	160	156	154	169
Commercial vegetables	145	142	136	153	120	137	155	156	166	143
Fresh market	144	144	132	164	113	137	163	164	179	147
Potatoes & dry beans	186	189	140	101	119	176	163	130	120	127
Livestock & products	160	170	161	153	157	158	160	158	160	157
Meat animals	174	193	186	167	177	177	178	176	180	174
Dairy products	140	141	126	142	136	138	139	139	138	137
Poultry & eggs	137	131	123	118	114	117	119	120	120	127
Prices paid										
Commodities & services, interest, taxes, & wage rates	178	184	189	189	191	192	192	192	192	192
Production items	166	171	173	172	174	175	175	175	174	174
Feed	136	128	123	—	—	123	—	—	119	—
Feeder livestock	194	213	214	—	—	204	—	—	206	—
Seed	165	165	163	—	—	162	—	—	162	—
Fertilizer	137	131	134	—	—	132	—	—	128	—
Agricultural chemicals	132	139	151	—	—	160	—	—	160	—
Fuels & energy	180	204	203	—	—	206	—	—	205	—
Farm & motor supplies	151	154	154	—	—	160	—	—	161	—
Autos & trucks	223	231	244	—	—	262	—	—	262	—
Tractors & self-propelled machinery	193	202	211	—	—	217	—	—	224	—
Other machinery	208	216	226	—	—	234	—	—	235	—
Building & fencing	141	143	146	—	—	150	—	—	152	—
Farm services & cash rent	161	166	170	—	—	171	—	—	171	—
Int. payable per acre on farm real estate debt	176	174	172	—	—	166	—	—	166	—
Taxes payable per acre on farm real estate	151	158	160	—	—	165	—	—	165	—
Wage rates (seasonally adjusted)	185	191	201	—	—	212	—	—	212	—
Production items, interest, taxes, & wage rates	167	172	175	—	—	176	—	—	176	—
Ratio, prices received to prices paid (%) 2/	83	81	77	74	73	72	72	72	72	71
Prices received (1910–14=100)	673	681	666	636	640	630	633	631	633	626
Prices paid, etc. (parity index) (1910–14=100)	1,221	1,265	1,299	—	—	1,322	—	—	1,324	—
Parity ratio (1910–14=100) (%) 2/	55	54	51	—	—	48	—	—	48	—

1/ Fresh market for noncitrus; fresh market & processing for citrus. 2/ Ratio of index of prices received for all farm products to index of prices paid for commodities & services, interest, taxes, & wage rates. Ratio uses the most recent prices paid index. Prices paid data are quarterly & will be published in January, April, July, & October. R = revised. P = preliminary. — = not available.

Information contact: Ann Duncan (202) 219–0313.

Table 5.—Prices Received by Farmers, U.S. Average

	Annual 1/			1991	1992					
	1989	1990	1991	Nov	June	July	Aug	Sept	Oct R	Nov P
CROPS										
All wheat ($/bu.)	3.72	2.61	3.05	3.25	3.42	3.14	3.01	3.21	3.21	3.36
Rice, rough ($/cwt)	7.35	6.70	7.70	7.78	6.93	8.94	6.61	6.40	6.37	6.37
Corn ($/bu.)	2.36	2.28	2.40	2.29	2.47	2.33	2.15	2.15	2.04	1.96
Sorghum ($/cwt)	3.75	3.79	4.15	3.94	4.22	3.80	3.77	3.68	3.23	3.35
All hay, baled ($/ton)	85.40	80.60	71.00	69.10	75.50	71.80	69.60	68.50	70.50	74.10
Soybeans ($/bu.)	5.69	5.74	5.60	5.48	5.94	5.59	5.40	5.35	5.26	5.33
Cotton, upland (cts./lb.)	63.6	67.1	56.8	60.9	56.9	55.3	53.8	52.6	52.7	50.6
Potatoes ($/cwt)	7.36	6.08	5.05	3.99	4.88	7.59	6.84	5.11	4.60	4.89
Lettuce ($/cwt) 2/	12.60	11.50	11.40	23.20	9.81	13.10	19.90	20.80	13.40	8.99
Tomatoes fresh ($/cwt) 2/	33.20	27.40	31.90	23.90	24.20	27.80	24.50	30.10	59.60	40.80
Onions ($/cwt)	11.40	10.50	12.50	10.60	9.73	12.20	15.90	12.40	12.20	12.70
Dry edible beans ($/cwt)	28.50	18.50	15.60	15.80	15.40	17.20	18.90	20.20	20.30	21.70
Apples for fresh use (cts./lb.)	13.9	20.9	25.1	25.4	25.7	27.1	30.4	29.3	22.4	19.9
Pears for fresh use ($/ton)	336.00	360.00	385.00	428.00	—	390.00	276.00	426.00	398.00	449.00
Oranges, all uses ($/box) 3/	7.08	6.16	7.35	5.96	5.14	2.32	1.65	1.37	1.79	3.80
Grapefruit, all uses ($/box) 3/	4.41	5.86	5.26	6.36	4.02	2.87	3.32	3.73	7.09	4.11
LIVESTOCK										
Beef cattle ($/cwt)	69.70	74.80	72.90	67.90	70.20	70.60	71.80	71.70	73.90	70.90
Calves ($/cwt)	91.80	96.50	100.00	90.20	88.40	90.10	90.60	87.40	86.40	87.20
Hogs ($/cwt)	43.20	54.00	48.80	38.00	46.40	44.40	43.90	41.90	41.90	40.90
Lambs ($/cwt)	67.30	56.00	52.60	50.70	67.00	61.40	56.00	56.70	55.40	56.70
All milk, sold to plants ($/cwt)	13.56	13.74	12.26	13.90	13.20	13.40	13.50	13.50	13.40	13.30
Milk, manuf. grade ($/cwt)	12.38	12.34	11.05	12.70	12.20	12.40	12.40	12.30	12.20	12.10
Broilers (cts./lb.)	36.1	32.4	31.0	29.5	31.6	33.8	34.6	31.8	32.9	33.2
Eggs (cts./doz.) 4/	70.0	70.4	66.9	82.7	53.0	52.3	53.4	59.5	56.9	64.9
Turkeys (cts./lb.)	40.0	38.4	38.5	37.0	37.4	38.2	37.9	37.1	38.6	39.0
Wool (cts./lb.) 5/	124.0	80.0	55.0	49.0	87.1	74.1	65.0	52.2	69.5	61.7

1/ Season average price by crop year for crops. Calendar year average of monthly prices for livestock. 2/ Excludes Hawaii. 3/ Equivalent on-tree returns. 4/ Average of all eggs sold by producers including hatching eggs & eggs sold at retail. 5/ Average local market price, excluding incentive payments. P = preliminary. R = revised. -- = not available.

Information contact: Ann Duncan (202) 219–0313.

Producer & Consumer Prices

Table 6.—Consumer Price Index for All Urban Consumers, U.S. Average (Not Seasonally Adjusted)

	Annual	1991	1992							
	1991	Nov	Apr	May	June	July	Aug	Sept	Oct	Nov
			1982–84=100							
Consumer Price Index, all items	136.2	137.8	139.5	139.7	140.2	140.5	140.9	141.3	141.8	142.0
Consumer Price Index, less food	136.1	138.0	139.7	140.1	140.7	141.1	141.4	141.8	142.4	142.7
All food	136.3	136.2	138.1	137.4	137.4	137.2	138.0	138.5	138.3	138.3
Food away from home	137.9	139.3	140.2	140.4	140.7	140.8	141.0	141.2	141.3	141.5
Food at home	135.8	135.0	137.4	136.2	136.1	135.7	136.9	137.4	137.2	137.0
Meats 1/	132.5	131.5	130.2	130.3	131.0	130.0	130.6	130.9	131.1	131.2
Beef & veal	132.4	131.9	133.2	132.6	132.7	130.7	131.4	131.8	132.8	132.9
Pork	134.1	131.3	125.1	126.8	127.9	129.1	129.5	129.4	128.7	127.9
Poultry	131.5	129.3	129.2	129.1	130.7	132.1	133.7	134.0	133.3	133.6
Fish	148.3	149.5	153.5	151.6	149.1	150.4	151.6	151.2	151.4	151.2
Eggs	121.2	115.4	105.1	104.2	100.7	104.7	102.2	111.6	109.3	113.4
Dairy products 2/	125.1	126.2	127.4	127.0	127.8	128.3	129.2	129.7	130.1	129.4
Fats & oils 3/	131.7	129.8	129.8	130.4	130.2	129.9	129.5	129.9	129.9	128.5
Fresh fruit	193.9	183.9	187.4	190.0	182.9	173.3	181.4	189.2	182.1	181.4
Processed fruit	131.8	131.4	140.0	140.0	138.3	138.4	138.2	138.0	138.4	135.5
Fresh vegetables	154.4	149.6	175.4	149.6	146.9	148.1	153.8	152.8	155.2	158.4
Potatoes	144.6	129.9	135.6	136.7	141.0	155.9	164.7	153.1	143.0	136.0
Processed vegetables	128.5	127.7	128.6	128.8	129.0	129.2	130.2	129.1	129.1	127.7
Cereals & bakery products	145.8	147.5	150.6	150.7	151.6	152.4	153.1	152.6	152.8	152.7
Sugar & sweets	129.3	130.6	133.0	132.9	133.3	133.8	133.8	133.7	133.7	133.0
Beverages, nonalcoholic	114.1	113.0	114.4	114.5	115.0	113.9	114.1	114.2	114.1	112.4
Apparel										
Apparel, commodities less footwear	127.4	132.2	132.0	131.8	129.0	126.8	128.1	131.7	133.7	133.1
Footwear	120.9	123.4	125.6	126.0	125.4	124.4	124.9	126.3	127.1	126.0
Tobacco & smoking products	202.7	209.0	214.9	220.0	219.2	220.5	221.5	224.0	225.6	225.0
Beverages, alcoholic	142.8	144.0	147.2	147.4	147.5	147.7	147.6	148.0	148.2	148.2

1/ Beef, veal, lamb, pork, & processed meat. 2/ Includes butter. 3/ Excludes butter.

Information contact: Ann Duncan (202) 219–0313.

Table 7.—Producer Price Indexes, U.S. Average (Not Seasonally Adjusted)

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June R	July	Aug	Sept	Oct
					1982 = 100					
All commodities	112.2	116 3	116.5	116.4	117 2	118.0	117.8	117.6	117.8	118.1
Finished goods 1/	113.6	119.2	121.7	122.2	123.2	123 7	123.7	123.5	123.3	124 3
All foods 2/	117.9	123.2	122.2	121.1	120.8	120.4	120.2	120 6	120.6	121.0
Consumer foods	118.7	124.4	124.4	123.0	123.1	123.0	122 9	123.2	123 2	123.6
Fresh fruit & melons	113.2	118.1	129.9	124.6	87.4	80.2	70.8	78.1	72.8	78.5
Fresh & dried vegetables	116.7	118.1	103.8	78.1	98.8	86.0	99.8	119.3	107.6	141 4
Dried fruit	103.0	106.7	111.8	112.1	115.1	114.9	113.9	113.8	113.8	113.6
Canned fruit & juice	122.7	127.0	128 6	130 3	136.7	136.4	136.3	135.5	133.5	132.3
Frozen fruit & juice	123.9	139.0	116.3	117.1	130.1	125.6	123.5	123.1	121.7	117.5
Fresh veg. excl. potatoes	103.9	107.8	100.2	73.5	89.9	81.3	85.5	115.5	115.1	149.4
Canned veg. & juices	118.6	116.7	112.9	111.0	109.8	109.4	109 5	109.4	108.8	109.1
Frozen vegetables	115.5	118.4	117.6	116.8	116.3	115.5	115.3	116.2	116.8	116.5
Potatoes	153.6	157.3	125 7	97.0	104.7	108.6	195.1	172.4	115.8	107.0
Eggs for fresh use	3/	3/	3/	3/	71.9	71 0	71.7	73.7	85 8	78.1
Bakery products	135.4	141.0	146 6	147.8	152.7	153.1	153.2	153.5	153.4	153 9
Meats	104.8	117.0	113.5	109.1	108.9	107.8	106.5	106.0	106.0	106.6
Beef & veal	108.9	116.0	112.2	106.9	112.1	108.9	106.4	107.1	107.4	109.5
Pork	97.7	119.8	113.4	107.4	101.4	102.9	102.6	100.7	100.0	98.8
Processed poultry	120.4	113.6	109.9	110.6	109.7	110.7	109.8	112.0	111.8	119.3
Fish	142.9	147.2	149.5	147.6	154.1	159.8	156.5	148.1	149.8	140.4
Dairy products	110.6	117.2	114.6	119.3	116.9	118.7	118.9	120.1	120.2	119.5
Processed fruits & vegetables	119.9	124.7	119.6	119.2	122.0	121.0	120.7	120.4	119.8	119.0
Shortening & cooking oil	116.6	123.2	116.5	114.8	116 1	118.7	116.0	111.3	112.8	112.6
Soft drinks	177.7	122 3	125.5	124 6	125.9	127.6	127.2	124.6	125.0	125.4
Consumer finished goods less foods	108.9	115.3	118.7	119.7	120.9	122.0	122.0	121.6	121.4	122.2
Beverages, alcoholic	115.2	117.2	123.7	123.1	126.7	126.4	127.0	126.6	125.7	125.4
Apparel	114.5	117 5	119.6	120.3	121.8	121.8	122.2	122.2	122.3	122.8
Footwear	120.8	125.6	128.6	129.1	131.6	131.9	131.8	132.3	132.6	131.5
Tobacco products	194.8	221 4	249.7	255.0	283.2	283.2	283.4	285.3	273.9	274.0
Intermediate materials 4/	112.0	114.5	114.4	114.2	114.5	115 3	116.3	115.3	115.6	115 4
Materials for food manufacturing	112.7	117.9	115.3	115.4	114.8	115.3	114.4	113 8	114.3	112.8
Flour	114.6	103 6	96.8	102.4	111.3	113.1	106.6	100.9	102.9	106.8
Refined sugar 5/	118.2	122.7	121.6	120.8	119 9	120.0	120.4	120.9	119.8	119.9
Crude vegetable oils	103 7	115.8	103.0	98.4	101.6	107.0	97.3	89.4	92.8	91.5
Crude materials 6/	103.1	108.9	101.2	99.9	101.2	101.5	101.3	100.9	102.0	101.8
Foodstuffs & feedstuffs	111.2	113.1	105.5	102.6	108.4	107.3	105.0	103.7	103.0	103.5
Fruits & vegetables & nuts 7/	114.6	117.5	114.7	98.1	91.3	83 3	85 2	95.9	89.1	104 9
Grains	106.4	97.4	92.0	94.8	103.5	105.7	95.0	88.5	90.6	87.8
Livestock	106.1	115.6	107.9	100.9	108.0	105.3	103.7	104 2	103.4	104 2
Poultry, live	128.8	118.8	111.2	109.1	116.1	109.8	124.1	120.5	111.8	111.8
Fibers, plant & animal	107.8	117.8	115.1	96.3	93.4	96.2	102 0	96 6	93 9	82.9
Fluid milk	98.8	100.8	99.5	98.1	95.3	98.0	99.7	100.2	99.5	97.9
Oilseeds	123.8	112.1	106.4	102.1	113.6	117.4	109.2	104.9	105.1	101.2
Tobacco, leaf	93.8	95.8	101.1	103.5	94.4	94 4	94.4	93.1	106.1	105.5
Sugar, raw cane	115.5	119.2	113.7	114.2	111.4	110.6	110.4	111.7	112.8	113.6

1/ Commodities ready for sale to ultimate consumer. 2/ Includes all raw, intermediate, & processed foods (excludes soft drinks, alcoholic beverages, & manufactured animal feeds). 3/ New index beginning Dec. 1991. 4/ Commodities requiring further processing to become finished goods. 5/ All types & sizes of refined sugar. 6/ Products entering market for the first time that have not been manufactured at that point. 7/ Fresh & dried. R = revised.

Information contact: Ann Duncan (202) 219-0313.

Farm-Retail Price Spreads

Table 8.—Farm-Retail Price Spreads

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June	July	Aug	Sept	Oct
Market basket 1/										
Retail cost (1982–84=100)	124.6	133 5	137.4	135.9	137.8	137.6	137.2	138.4	139 1	138.9
Farm value (1982–84=100)	107.1	113.1	106.1	101.8	102.6	102.7	103.7	104.5	104.1	104.8
Farm–retail spread (1982–84=100)	134.1	144.5	154.2	154.3	156.7	156.3	155 3	156.6	157.9	157.4
Farm value–retail cost (%)	30.1	29.7	27.0	26 2	26.1	26.1	26.5	26.4	26.2	26.4
Meat products										
Retail cost (1982–84=100)	116.7	128.5	132.5	131.3	130.3	131.0	130.0	130.6	130.9	131.1
Farm value (1982–84=100)	103 6	116.8	110.0	103.3	107.5	107.8	107.2	104.7	104.8	104 2
Farm–retail spread (1982–84=100)	130.2	140.4	155.6	160.0	153.7	154.8	153.4	157.1	157 7	158.7
Farm value–retail cost (%)	44.9	46.0	42.0	39.8	41.8	41.7	41.8	40 6	40 6	40 3
Dairy products										
Retail cost (1982–84=100)	115.6	126.5	125.1	125.7	127.0	127.8	128.3	129.2	129.7	130.7
Farm value (1982–84=100)	99 1	101.7	90.0	95.9	93.9	96.1	97.8	99.1	99.3	97.4
Farm–retail spread (1982–84=100)	130.8	149.5	157.5	153.2	157.5	157.0	156.4	157.0	157.7	160.2
Farm value–retail cost (%)	41.1	38.5	34.5	36.6	35 5	36.1	36.6	36.8	36.7	35.9
Poultry										
Retail cost (1982–84=100)	132.7	132.5	131 5	131.0	129.1	130.7	132.1	133.7	134.0	133.3
Farm value (1982–84=100)	117.1	107.6	102.5	103.1	104.1	103.7	110.1	112.1	104.1	107.9
Farm–retail spread (1982–84=100)	150.6	161.1	164.9	163.1	157.9	161.7	157.4	158.5	168.4	162.6
Farm value–retail cost (%)	47.2	43.5	41.7	42.1	43.2	42 5	44.6	44.9	41.6	43.3
Eggs										
Retail cost (1982–84=100)	118.5	124.1	121.2	116.8	104.2	100.7	104.7	102.2	111.6	109.3
Farm value (1982–84=100)	107.5	108.0	100.9	95.0	67.0	69.9	68.6	70.7	84.1	78.2
Farm–retail spread (1982–84=100)	138.1	153.2	157.6	155.9	171.0	156 0	169.6	158.9	161.1	165.2
Farm value–retail cost (%)	58.3	55.9	53.5	52.3	41.3	44.6	42.1	44.4	48.4	46.0
Cereal & bakery products										
Retail cost (1982–84=100)	132.4	140.0	145.8	146 9	150.7	151.6	152.4	153.1	152.6	152.8
Farm value (1982–84=100)	101.7	90.5	85.3	90.8	99.6	96.5	90.9	87.7	89.9	89.7
Farm–retail spread (1982–84=100)	136.7	146.9	154.3	154.7	157.8	159.3	161.0	162.2	161 3	161.6
Farm value–retail cost (%)	9.4	7.9	7.2	7.6	8.1	7.8	7.3	7.0	7.2	7.2
Fresh fruits										
Retail cost (1982–84=100)	154.7	174.6	200.1	194.6	197.2	188.0	178.3	183.7	195.3	188 0
Farm value (1982–84=100)	108.5	128.3	174.4	145.4	118.3	120.5	117 2	119.7	127.6	114.0
Farm–retail spread (1982–84=100)	176.0	195.9	211.9	217.3	233.8	219.2	206.5	213.2	226.6	222.2
Farm value–retail cost (%)	22 2	23.2	27.5	23.6	19.0	20.2	20.8	20.6	20.6	19.1
Fresh vegetables										
Retail costs (1982–84=100)	143.1	151.1	154.4	134.0	149.6	146.9	148.1	153 8	152.8	155.2
Farm value (1982–84=100)	123.3	124.4	110.8	84.8	194.7	88.6	110.3	128.5	117.5	144.1
Farm–retail spread (1982–84=100)	153.2	164.9	176.8	159.3	177.8	176.9	167.5	166.8	170.9	160.9
Farm value–retail cost (%)	29.3	28.0	24.4	21.5	21.5	20.5	25.3	28.4	26.1	31.5
Processed fruits & vegetables										
Retail cost (1982–84=100)	125 0	132.7	130.2	129.6	135.0	134.1	134.2	134.6	134.0	133.1
Farm value (1982–84=100)	132.4	144.0	121.6	119 1	132.8	131.2	129.9	129.9	128.9	127.9
Farm–retail spread (1982–84=100)	122.7	129.1	132.9	132.9	135.7	135.0	135.6	136.1	135.6	134.7
Farm value–retail costs (%)	25.2	25.8	22.2	21.8	23.4	23.3	23.0	22.9	22.9	22.8
Fats & oils										
Retail cost (1982–84=100)	121.2	126 3	131.7	131.7	130.4	130.2	129 9	129.5	129.9	129.9
Farm value (1982–84=100)	95.8	107.1	98.0	92.4	96.9	99.4	89.2	88 7	89.1	90.0
Farm–retail spread (1982–84=100)	130.6	133.4	144.2	148.1	142.7	141.5	144.9	144.5	144.9	144.6
Farm value–retail cost (%)	21.2	22.8	20.0	18.9	20.0	20.5	18.5	18.4	18.4	18.6

	Annual			1991	1992					
	1989	1990	1991	Nov	June	July	Aug	Sept	Oct	Nov
Beef, Choice										
Retail price 2/ (cts./lb.)	265.7	281.0	288.3	281.0	287.1	283.8	280.1	284.1	285.6	287.1
Wholesale value 3/ (cts.)	176.8	189.6	182.5	175.1	180.8	173.6	175.8	175.9	177.5	177.1
Net farm value 4/ (cts.)	157.6	168.4	180.2	152.5	159.4	156.9	159.0	159.6	160.1	159.5
Farm–retail spread (cts.)	108 1	112.6	128.1	128.5	127.7	126 9	121.1	124.5	125.5	127.6
Wholesale–retail 5/ (cts.)	88.9	91.4	105 8	105.9	106.3	110.2	104.3	108.2	108.1	110.0
Farm–wholesale 6/ (cts.)	19.2	21.2	22.3	22.6	21 4	16.7	16.8	16.3	17.4	17.6
Farm value–retail price (%)	59	60	58	54	56	55	57	56	56	56
Pork										
Retail price 2/ (cts./lb.)	182 9	212.6	211.9	205.1	197.1	200.6	200 4	199.6	198.4	196 4
Wholesale value 3/ (cts.)	99.2	118.3	108.9	97.6	104.8	101.8	101.7	99.6	98.8	96.9
Net farm value 4/ (cts.)	70.4	87 2	78.4	60.6	76.1	72.2	71.6	87 4	87.1	66.0
Farm–retail spread (cts.)	112 5	125.4	133.5	144 5	121.0	128.4	128.8	132.2	131 3	130.4
Wholesale–retail 5/ (cts.)	83.7	94 3	103.0	107.5	92.3	98.8	98.7	100.0	99.6	99.5
Farm–wholesale 6/ (cts.)	28.8	31.1	30.5	37.0	28.7	29.6	30.1	32.2	31.7	30.9
Farm value–retail price (%)	38	41	37	30	39	36	36	34	34	34

1/ Retail costs are based on CPI–U of retail prices for domestically produced farm foods, published monthly by BLS. The farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for byproduct. Farm values are based on prices at first point of sale & may include marketing charges such as grading & packing for some commodities. The farm–retail spread, the difference between the retail price & the farm value, represents charges for assembling, processing, transporting, distributing 2/ Weighted average price of retail cuts from pork & choice yield grade 3 beef. Prices from BLS. 3/ Value of wholesale (boxed beef) & wholesale cuts (pork) equivalent to 1 lb. of retail cuts adjusted for transportation costs & byproduct values. 4/ Market value to producer for live animal equivalent to 1 lb. of retail cuts, minus value of byproducts 5/ Charges for retailing & other marketing services such as wholesaling, and in–city transportation. 8/ Charges for livestock marketing, processing, & transportation.

Information contacts. Denis Dunham (202) 219–0870, Larry Duewer (202) 219–0712.

Table 9.—Price Indexes of Food Marketing Costs

(See the December 1992 issue.)
Information contact: Denis Dunham (202) 219-0870.

Livestock & Products

Table 10.—U.S. Meat Supply & Use

	Beg. stocks	Production 1/	Imports	Total supply	Exports	Ending stocks	Consumption: Total	Consumption: Per capita 2/	Primary market price 3/
			Million pounds 4/					Pounds	
Beef									
1990	335	22,743	2,356	25,434	1,006	397	24,031	67.8	78.55
1991	397	22,917	2,406	25,720	1,188	419	24,113	66.8	74.28
1992 F	419	23,150	2,410	25,979	1,325	400	24,254	66.5	74–78
1993 F	400	23,492	2,400	26,292	1,400	350	24,542	66.8	71–77
Pork									
1990	313	15,354	898	16,565	238	296	16,030	49.8	55.32
1991	296	15,999	775	17,070	283	393	16,394	50.3	49.69
1992 F	393	17,265	644	18,302	397	385	17,520	53.2	42–44
1993 F	385	17,851	650	18,886	450	375	18,061	54.3	39–45
Veal 5/									
1990	4	327	0	331	0	6	325	1.1	96.51
1991	6	306	0	312	0	7	305	1.0	99.94
1992 F	7	308	0	315	0	6	309	1.0	89–91
1993 F	6	307	0	313	0	4	309	1.0	85–91
Lamb & mutton									
1990	8	363	59	430	3	8	419	1.5	55.54
1991	8	363	60	431	3	6	422	1.5	53.21
1992 F	6	353	66	425	3	8	414	1.4	59–61
1993 F	8	362	60	430	2	9	419	1.4	57–63
Total red meat									
1990	660	38,787	3,313	42,760	1,247	707	40,806	120.1	—
1991	707	39,585	3,241	43,533	1,474	825	41,234	119.8	—
1992 F	825	41,076	3,120	45,021	1,725	799	42,497	122.2	—
1993 F	799	42,012	3,110	45,921	1,852	738	433,331	123.4	—
Broilers									
1990	38	18,430	0	18,468	1,143	26	17,299	61.1	54.8
1991	26	19,591	0	19,617	1,261	36	18,320	63.9	52.0
1992 F	36	20,826	0	20,862	1,439	30	19,393	67.0	51–53
1993 F	30	21,629	0	21,659	1,460	35	20,164	69.0	49–55
Mature chicken									
1990	189	523	0	713	25	224	464	1.9	—
1991	224	508	0	732	28	274	429	1.7	—
1992 F	274	535	0	810	33	300	477	1.9	—
1993 F	300	522	0	822	32	230	560	2.2	—
Turkeys									
1990	238	4,514	0	4,750	54	306	4,390	17.6	63.2
1991	306	4,603	0	4,909	103	264	4,541	18.0	61.3
1992 F	264	4,764	0	5,028	165	300	4,563	17.9	58–60
1993 F	300	4,843	0	5,143	175	275	4,693	18.2	57–63
Total poultry									
1990	463	23,468	0	23,931	1,222	557	22,152	80.5	—
1991	557	24,701	0	25,258	1,392	575	23,291	83.6	—
1992 F	575	26,125	0	26,700	1,636	630	24,433	86.7	—
1993 F	630	26,994	0	27,624	1,667	540	25,417	89.3	—
Red meat & poultry									
1990	1,123	62,255	3,313	66,691	2,469	1,264	62,958	200.6	—
1991	1,264	64,286	3,241	68,791	2,887	1,400	64,525	203.2	—
1992 F	1,400	67,201	3,120	71,721	3,362	1,429	66,930	208.9	—
1993 F	1,429	69,006	3,110	73,545	3,519	1,278	68,748	212.7	—

1/ Total including farm production for red meats & federally inspected plus nonfederally inspected for poultry. 2/ Retail weight basis. (The beef carcass–to–retail conversion factor was 70.5). 3/ Dollars per cwt for red meat; cents per pound for poultry. Beef: Medium # 1, Nebraska Direct 1,100–1,300 lb.; pork: barrows & gilts, Iowa, Southern Minnesota; veal: farm price of calves; lamb & mutton: Choice slaughter lambs, San Angelo; broilers: wholesale 12–city average; turkeys; wholesale NY 8–16 lb. young hens. 4/ Carcass weight for red meats & certified ready–to–cook for poultry. 5/ Beginning 1989 veal trade no longer reported separately. F = forecast. — = not available.

Information contacts: Polly Cochran or Maxine Davis (202) 219–0767.

Table 11.—U.S. Egg Supply & Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption: Total	Consumption: Per capita	Wholesale price*
	Million dozen								No.	Cts./doz.
1987	10.4	5,868.2	5.6	5,884.2	111.2	599.1	14.4	5,159.5	254.9	61.6
1988	14.4	5,784.2	5.3	5,803.9	141.8	605.9	15.2	5,041.0	246.9	62.1
1989	15.2	5,598.2	25.2	5,638.5	91.6	643.9	10.7	4,892.4	237.3	81.9
1990	10.7	5,665.3	9.1	5,685.0	100.5	678.5	11.6	4,894.4	235.0	82.2
1991	11.6	5,757.8	2.3	5,771.8	154.3	708.1	13.0	4,896.4	232.7	77.5
1992 F	13.0	5,876.3	4.1	5,893.3	150.1	728.1	14.0	5,001.1	235.0	65–66

* Cartoned grade A large eggs, New York. F = forecast

Information contact: Maxine Davis (202) 219–0767.

Table 12.—U.S. Milk Supply & Use[1/]

	Production	Farm use	Commercial: Farm marketings	Commercial: Beg. stock	Imports	Total commercial supply	CCC net removals	Commercial: Ending stocks	Commercial: Disappearance	All milk price 1/	CCC net removals: Skim solids basis	CCC net removals: Total solids basis 2/
	Billion pounds (milkfat basis)									$/cwt	Billion pounds	
1985	143.0	2.5	140.6	4.8	2.8	148.2	13.3	4.5	130.4	12.76	17.2	15.6
1986	143.1	2.4	140.7	4.5	2.7	147.9	10.8	4.1	133.0	12.51	14.3	12.9
1987	142.7	2.3	140.5	4.1	2.5	147.1	6.8	4.6	135.7	12.54	9.3	8.3
1988	145.2	2.2	142.9	4.6	2.4	149.9	9.1	4.3	136.5	12.26	5.5	6.9
1989	144.2	2.1	142.2	4.3	2.5	149.0	9.4	4.1	135.4	13.56	0.4	4.0
1990	148.3	2.0	146.3	4.1	2.7	153.1	9.0	5.1	138.9	13.68	1.6	4.6
1991	148.5	2.0	146.5	5.1	2.6	154.3	10.4	4.5	139.4	12.24	3.9	6.5
1992 F	151.9	2.0	149.8	4.5	2.5	156.8	10.2	4.5	142.1	13.21	1.7	5.1
1993 F	151.5	2.0	149.4	4.5	2.6	156.5	7.1	4.5	145.0	12.50	3.0	4.6

1/ Delivered to plants & dealers; does not reflect deductions. 2/ Arbitrarily weighted average of milkfat basis (40 percent) & skim solids basis (60 percent). F = forecast.

Information contact: Jim Miller (202) 219–0770

Table 13.—Poultry & Eggs

	Annual: 1989	Annual: 1990	Annual: 1991	1991: Oct	1992: May	1992: June	1992: July	1992: Aug	1992: Sept	1992: Oct
Broilers										
Federally inspected slaughter, certified (mil. lb.)	17,334.2	18,553.9	19,727.7	1,833.9	1,740.3	1,824.7	1,819.9	1,763.3	1,803.5	1,839.9
Wholesale price, 12–city (cts./lb.)	59.0	54.8	52.0	51.6	55.1	52.4	56.0	56.1	51.3	53.7
Price of grower feed ($/ton)	237	218	207	207	211	211	211	210	212	206
Broiler–feed price ratio 1/	3.0	3.0	3.0	3.0	3.0	3.0	3.2	3.3	3.0	3.2
Stocks beginning of period (mil. lb.)	35.9	38.3	26.1	41.5	35.4	31.8	33.7	35.1	36.0	31.1
Broiler–type chicks hatched (mil.) 2/	5,946.9	6,324.4	6,613.3	531.1	595.8	583.4	584.1	579.0	554.5	546.2
Turkeys										
Federally inspected slaughter, certified (mil. lb.)	4,174.8	4,560.9	4,651.9	482.0	374.2	434.7	452.0	411.9	431.3	467.0
Wholesale price, Eastern U.S., 8–16 lb. young hens (cts./lb.)	66.7	63.2	61.2	60.5	60.0	59.5	57.0	57.8	61.0	63.9
Price of turkey grower feed ($/ton)	251.0	238	230	231	243	241	246	245	247	241
Turkey–feed price ratio 1/	3.2	3.2	3.3	3.2	3.1	3.1	3.1	3.1	3.0	3.2
Stocks beginning of period (mil. lb.)	249.7	235.9	306.4	667.2	430.2	486.8	580.1	662.1	672.7	734.4
Poults placed in U.S. (mil.)	290.7	304.9	308.0	22.0	28.6	28.8	29.3	25.5	21.6	21.9
Eggs										
Farm production (mil.)	67,178	67,983	69,094	5,898	5,907	5,685	5,899	5,909	5,747	6,023
Average number of layers (mil.)	269	270	274	276	276	275	275	274	277	280
Rate of lay (eggs per layer on farms)	249.8	251.7	252.4	21.4	21.4	20.7	21.5	21.8	20.8	21.5
Cartoned price, New York, grade A large (cts./doz.) 3/	81.9	82.2	77.5	74.5	58.9	62.0	58.6	64.8	70.5	65.3
Price of laying feed ($/ton)	209	200	192	194	199	200	201	202	202	196
Egg–feed price ratio 1/	6.7	7.0	6.9	6.4	5.2	5.3	5.2	5.3	5.9	5.8
Stocks, first of month										
Shell (mil. doz.)	0.27	0.36	0.45	0.39	0.81	1.02	0.90	0.87	0.69	0.66
Frozen (mil. doz.)	14.9	10.3	11.2	12.5	14.3	14.4	16.1	14.8	15.3	15.2
Replacement chicks hatched (mil.)	383	398	417	34.1	38.3	34.3	32.0	28.2	27.9	31.9

1/ Pounds of feed equal in value to 1 dozen eggs or 1 lb. of broiler or turkey liveweight. 2/ Placement of broiler chicks is currently reported for 15 States only; henceforth, hatch of broiler–type chicks will be used as a substitute. 3/ Price of cartoned eggs to volume buyers for delivery to retailers.

Information contact: Maxine Davis (202) 219–0767.

Table 14.—Dairy

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June	July	Aug	Sept	Oct
Milk prices, Minnesota–Wisconsin, 3.5% fat ($/cwt) 1/	12.37	12.21	11.05	12.50	12.06	12.46	12.59	12.54	12.28	12.05
Wholesale prices										
Butter, grade A Chi. (cts./lb.)	127.9	102.1	99.3	106.2	83.8	76.6	76.6	76.6	81.7	82.2
Am. cheese, Wis. assembly pt. (cts./lb.)	138.8	136.7	124.4	140.2	139.9	141.3	141.8	142.0	136.9	132.4
Nonfat dry milk (cts./lb.) 2/	105.5	100.6	94.0	114.8	8/ 110.2	116.7	115.0	111.6	105.1	108.0
USDA net removals 3/										
Total milk equiv. (mil. lb.) 4/	9,418.9	9,017.2	10,433.9	126.8	1,237.8	655.8	527.8	393.0	246.7	241.1
Butter (mil. lb.)	413.4	400.3	442.8	5.7	55.0	28.3	22.6	17.3	8.3	9.6
Am. cheese (mil. lb.)	37.4	21.5	77.6	0	0	0.2	0.3	0.3	0.3	0.3
Nonfat dry milk (mil. lb.)	0	117.8	269.5	8.9	28.6	2.4	8.1	11.6	16.3	21.3
Milk										
Milk prod. 21 States (mil. lb.)	122,509	125,772	125,683	10,212	11,258	10,868	10,939	10,756	10,300	10,550
Milk per cow (lb.)	14,369	14,778	14,977	1,224	1,363	1,316	1,324	1,301	1,248	1,279
Number of milk cows (1,000)	8,526	8,512	8,392	8,346	8,262	8,260	8,259	8,265	8,254	8,248
U.S. milk production (mil. lb.)	144,239	148,314	148,525	7/ 12,102	7/ 13,331	7/ 12,869	7/ 12,887	7/ 12,671	7/ 12,136	7/ 12,503
Stock, beginning										
Total (mil. lb.)	8,379	9,038	13,359	17,649	20,050	20,703	21,469	22,028	20,832	18,406
Commercial (mil. lb.)	4,256	4,120	5,146	5,243	4,955	5,075	5,104	5,675	5,676	5,234
Government (mil. lb.)	4,122	4,916	8,213	12,405	15,095	15,628	16,364	16,350	15,156	13,172
Imports, total (mil. lb.)	2,499	2,690	2,624	261	216	215	220	170	196	—
Commercial disappearance (mil. lb.)	135,370	138,922	139,376	12,667	12,017	12,232	11,836	12,275	12,360	—
Butter										
Production (mil. lb.)	1,295.4	1,302.2	1,336.3	102.3	118.2	103.2	96.8	84.8	90.0	100.4
Stocks, beginning (mil. lb.)	214.7	256.2	416.1	597.2	701.7	734.1	766.2	780.6	732.3	630.7
Commercial disappearance (mil. lb.)	876.0	915.2	903.0	103.0	65.0	76.7	62.5	63.7	95.8	—
American cheese										
Production (mil. lb.)	2,674.1	2,894.2	2,804.9	226.4	261.8	259.7	259.3	242.4	222.9	240.2
Stocks, beginning (mil. lb.)	293.0	236.2	347.4	375.0	338.4	349.0	345.1	370.1	364.8	350.5
Commercial disappearance (mil. lb.)	2,683.1	2,784.4	2,792.7	261.0	252.7	263.7	232.9	246.2	233.5	—
Other cheese										
Production (mil. lb.)	2,941.3	3,167.0	3,285.9	294.6	289.1	288.3	286.7	293.5	297.1	321.5
Stocks, beginning (mil. lb.)	104.7	93.2	110.6	103.9	115.0	116.6	121.8	127.1	123.9	121.1
Commercial disappearance (mil. lb.)	3,208.9	3,426.4	3,575.2	336.7	310.5	305.9	304.7	316.3	321.2	—
Nonfat dry milk										
Production (mil. lb.)	874.7	879.2	877.5	48.7	89.2	81.3	76.0	59.2	52.8	53.6
Stocks, beginning (mil. lb.)	53.1	49.5	161.9	302.6	138.7	137.5	149.5	148.7	138.1	112.0
Commercial disappearance (mil. lb.)	873.0	697.6	662.7	49.0	50.6	56.9	53.9	46.6	54.5	—
Frozen dessert										
Production (mil. gal.) 5/	1,214.0	1,174.6	1,196.1	93.6	118.6	127.9	125.4	117.7	105.2	92.0

	Annual			1991				1992		
	1989	1990	1991	I	II	III	IV	I	II P	III P
Milk production (mil. lb.)	144,239	148,314	148,525	37,425	38,633	36,255	36,212	37,958	39,067	37,694
Milk per cow (lb.)	14,244	14,646	14,867	3,705	3,864	3,647	3,651	3,850	3,966	3,829
No. of milk cows (1,000)	10,126	10,127	9,990	10,101	9,999	9,940	9,918	9,858	9,851	9,846
Milk-feed price ratio 6/	1.65	1.71	1.58	1.48	1.46	1.59	1.77	1.68	1.65	1.75
Returns over concentrate costs ($/cwt milk) 6/	10.18	10.39	9.00	8.25	8.05	9.25	10.45	9.60	9.50	10.20

1/ Manufacturing grade milk. 2/ Prices paid f.o.b. Central States production area. 3/ Includes products exported through the Dairy Export Incentive Program (DEIP). 4/ Milk equivalent, fat basis. 5/ Hard ice cream, ice milk, & hard sherbet. 6/ Based on average milk price after adjustment for price support deductions. 7/ Estimated. 8/ Entire period not available. Average of weeks reported. P = preliminary. — = not available.

Information contact: LaVerne T. Williams (202) 219–0770.

Table 15.—Wool

	Annual			1991			1992		
	1989	1990	1991	II	III	IV	I	II	III P
U.S. wool price, (cts./lb.) 1/	370	256	199	200	217	182	209	222	210
Imported wool price, (cts./lb.) 2/	354	287	187	199	194	222	250	233	203
U.S. mill consumption, scoured									
Apparel wool (1,000 lb.)	120,534	120,822	143,519	37,111	34,578	33,916	36,929	36,045	34,462
Carpet wool (1,000 lb.)	14,122	12,124	14,363	3,118	4,561	3,588	4,580	3,623	3,145

1/ Wool price delivered at U.S. mills, clean basis, Graded Territory 64's (20.60–22.04 microns) staple 2-3/4" & up. 2/ Wool price, Charleston, SC warehouse, clean basis, Australian 60/62's, type 64A (24 micron). Duty since 1982 has been 10.0 cents. P = preliminary. -- = not available.

Information contact: John Lawler (202) 219–0840.

Table 16.—Meat Animals

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June	July	Aug	Sept	Oct
Cattle on feed (7 States)										
Number on feed (1,000 head) 1/	8,045	8,378	8,992	7,216	7,818	7,826	7,337	7,000	6,968	7,495
Placed on feed (1,000 head)	20,819	21,030	19,704	2,539	1,724	1,339	1,432	1,541	2,179	2,608
Marketings (1,000 head)	19,407	19,198	19,066	1,665	1,594	1,712	1,684	1,592	1,586	1,493
Other disappearance (1,000 head)	1,079	1,218	1,233	77	122	116	85	81	66	76
Beef steer–corn price ratio, Omaha 2/	30.3	32 8	31 6	29.9	30.6	29.4	32 2	34.7	35.1	37 4
Hog–corn price ratio, Omaha 2/	18.4	23.1	21.1	18.9	18.7	18.7	20.0	21.3	20.3	21.3
Market prices ($/cwt)										
Slaughter cattle										
Choice steers, Omaha 1,000–1,100 lb.	72 52	77.40	73.83	68.91	76.31	74.15	73.05	73.08	73.68	74.13
Choice steers, Neb. Direct, 1,100–1,300 lb.	73.86	78.58	74.28	69.79	76.18	74.02	73.23	73.96	74.44	75.97
Boning utility cows, Sioux Falls	48.98	53.60	50.31	47.83	45.63	43.47	44.28	46.13	46.43	45.69
Feeder cattle										
Medium no. 1, Oklahoma City 600–700 lb.	86.66	92.15	92.74	88.6	84.99	85.19	87.46	88.18	87.48	85.23
Slaughter hogs										
Barrows & gilts, Iowa, S. Minn.	44.74	55.32	49.69	44.02	46.41	48.64	45.22	45.27	42.68	42.69
Feeder pigs										
S. Mo. 40–50 lb. (per head)	33.63	51.46	39.84	33.75	32.10	27.50	26.20	31.28	31.18	31.78
Slaughter sheep & lambs										
Lambs, Choice, San Angelo	67.32	55.54	52.73	51.20	68.88	64.50	58.17	53 50	52.50	52.81
Ewes, Good, San Angelo	38.58	35 21	31.98	28.80	31.63	29.44	33.57	35.38	32.39	29.56
Feeder lambs										
Choice, San Angelo	79.85	62.95	53.27	51.70	64.69	61 22	56.43	53.69	55.43	52.94
Wholesale meat prices, Midwest										
Boxed beef cut-out value	114.75	123.21	118 31	113.04	119.18	117.53	112.79	114.36	114.40	115.51
Canner & cutter cow beef	94.43	99.96	99.44	96.16	95 31	93.14	94.29	96 74	93.23	90.85
Pork loins, 14–18 lb 3/	101.09	117.52	108 39	100.87	108.94	113.94	108.22	111.18	102.98	96.98
Pork bellies, 12–14 lb.	34.14	53.80	47.79	32.26	34.09	32.78	32.77	35 13	29.09	29.13
Hams, skinned, 17–20 lb.	NA	84.87	75.68	81.04	62.27	66.13	67.16	68.34	73.7	78.58
All fresh beef retail price 4/	238 97	254.99	262.12	259.10	259.28	257.47	257.09	258.21	258.72	261.50
Commercial slaughter (1,000 head) 5/										
Cattle	33,918	33,241	32,690	2,932	2,745	2,923	2,860	2,782	2,809	2,863
Steers	16,539	16,587	16,732	1,464	1,473	1,614	1,571	1,494	1,458	1,433
Heifers	10,406	10,090	9,719	882	772	800	796	802	808	802
Cows	6,316	5,920	5,623	525	445	451	435	427	482	564
Bulls & stags	657	644	614	61	55	58	58	59	61	64
Calves	2,172	1,789	1,436	131	106	108	109	110	110	115
Sheep & lambs	5,466	5,654	5,722	522	388	436	444	418	489	470
Hogs	88,691	85,136	88,169	8,498	7,061	7,345	7,639	7,682	8,414	8,791
Commercial production (mil. lb.)										
Beef	22,974	22,634	22,800	2,114	1,899	2,038	2,015	1,980	1,995	2,014
Veal	344	316	296	28	25	25	24	24	23	24
Lamb & mutton	341	358	358	32	25	27	27	25	30	29
Pork	15,759	15,300	15,948	1,534	1,287	1,332	1,374	1,378	1,510	1,588

	Annual			1991			1992			
	1989	1990	1991	II	III	IV	I	II	III	IV
Cattle on feed (13 States)										
Number on feed (1,000 head) 1/	9,688	9,943	10,827	10,739	9,461	8,620	10,135	9,693	8,847	8,920
Placed on feed (1,000 head)	24,469	24,803	23,208	5,006	5,414	7,086	5,403	5,273	6,107	—
Marketings (1,000 head)	22,940	22,526	22,383	5,820	5,973	5,262	5,441	5,675	5,766	*5,225
Other disappearance (1,000 head)	1,274	1,393	1,517	464	282	309	404	444	268	—
Hogs & pigs (10 States) 6/										
Inventory (1,000 head) 1/	43,210	42,200	42,900	41,990	44,520	46,900	45,735	44,770	47,225	49,145
Breeding (1,000 head) 1/	5,335	5,275	5,257	5,450	5,720	5,675	5,810	5,550	5,840	5,835
Market (1,000 head) 1/	37,875	36,925	37,643	36,540	38,800	41,225	40,125	39,220	41,385	43,310
Farrowings (1,000 head)	9,203	8,960	9,479	2,586	2,441	2,348	2,289	2,655	2,513	2,445
Pig crop (1,000 head)	71,807	70,589	75,035	20,632	19,278	18,551	18,475	21,504	20,493	—

1/ Beginning of period. 2/ Bushels of corn equal in value to 100 pounds live weight. 3/ Prior to 1984, 8–14 lb.; 1984 & 1985, 14–17 lb; beginning 1986, 14–18 lb. 4/ New series estimating the composite price of all beef grades & ground beef sold by retail stores. This new series is in addition to, but does not replace, the series for the retail price of Choice beef that appears in table 8. 5/ Classes estimated. 6/ Quarters are Dec. of preceding year–Feb. (I), Mar.–May (II), June–Aug. (III), & Sept–Nov. (IV). May not add to NASS totals due to rounding. — = not available. *Intentions.

Information contact: Polly Cochran (202) 219–0767.

Crops & Products

Table 17.—Supply & Utilization[1,2]

	Area											
	Set aside 3/	Planted	Harvested	Yield	Production	Total supply 4/	Feed and residual	Other domestic use	Exports	Total use	Ending stocks	Farm price 5/
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Wheat												
1987/88	23.9	65.8	55.9	37.7	2,108	3,945	290	806	1,588	2,684	1,261	2.57
1988/89	22.4	65.5	53.2	34.1	1,812	3,096	150	829	1,415	2,394	702	3.72
1989/90	9.6	76.6	62.2	32.7	2,037	2,762	144	849	1,232	2,225	536	3.72
1990/91*	7.5	77.2	69.3	39.5	2,736	3,309	499	875	1,068	2,443	866	2.81
1991/92*	15.9	69.9	57.7	34.3	1,981	2,888	257	879	1,281	2,416	472	3.00
1992/93*	7.0	72.3	62.4	39.4	2,459	2,981	250	933	1,300	2,483	498	3.15–3.35
	Mil. acres			Lb./acre				Mil. cwt (rough equiv.)				$/cwt
Rice												
1987/88	1.57	2.36	2.33	5,555	129.6	184.0	—	6/ 80.4	72.2	152.6	31.4	7.27
1988/89	1.09	2.93	2.90	5,514	159.9	195.1	—	6/ 82.4	85.9	168.4	26.7	8.83
1989/90	1.18	2.73	2.69	5,749	154.5	185.6	—	6/ 82.1	77.2	159.3	26.4	7.35
1990/91*	1.02	2.90	2.82	5,529	156.1	187.2	—	6/ 91.7	70.9	162.7	24.6	6.70
1991/92*	0.9	2.86	2.75	5,617	154.5	184.3	—	6/ 90.7	66.4	157.1	27.3	7.58
1992/93*	0.4	3.03	2.97	5,666	168.2	201.1	—	6/ 94.0	74.0	168.0	33.1	5.90–6.40
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Corn												
1987/88	23.1	66.2	59.5	119.8	7,131	12,016	4,798	1,243	1,716	7,757	4,259	1.94
1988/89	20.5	67.7	58.3	84.6	4,929	9,191	3,941	1,283	2,026	7,260	1,930	2.54
1989/90	10.8	72.2	64.7	116.3	7,525	9,458	4,389	1,356	2,368	8,113	1,344	2.36
1990/91*	10.7	74.2	67.0	118.5	7,934	9,282	4,669	1,367	1,725	7,761	1,521	2.28
1991/92*	7.4	76.0	68.8	108.6	7,474	9,015	4,897	1,434	1,584	7,915	1,100	2.37
1992/93*	5.3	79.3	72.1	129.3	9,329	10,432	5,200	1,485	1,650	8,335	2,097	1.90–2.20
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Sorghum												
1987/88	4.1	11.8	10.5	69.4	731	1,474	555	25	232	812	663	1.70
1988/89	3.9	10.3	9.0	63.8	577	1,239	466	22	312	800	440	2.27
1989/90	3.3	12.6	11.1	55.4	615	1,055	517	15	303	835	220	2.08
1990/91*	3.3	10.5	9.1	63.1	573	793	410	9	232	651	143	2.12
1991/92*	2.5	11.0	9.8	59.0	579	722	368	9	291	669	53	2.26
1992/93*	1.9	13.5	12.3	71.2	878	931	500	10	300	810	121	1.75–2.05
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Barley												
1987/88	2.9	11.0	10.0	52.4	521	869	253	174	121	548	321	1.81
1988/89	2.8	9.8	7.8	38.0	290	622	171	175	79	425	196	2.80
1989/90	2.3	9.1	8.3	48.6	404	614	193	175	84	453	161	2.42
1990/91*	2.9	8.2	7.5	56.1	422	596	205	176	81	461	135	2.14
1991/92*	2.2	8.9	8.4	55.2	464	624	230	171	95	496	129	2.10
1992/93*	2.1	7.8	7.3	62.4	456	600	195	170	110	475	125	2.00–2.10
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Oats												
1987/88	0.8	17.9	6.9	54.3	374	552	358	81	1	440	112	1.56
1988/89	0.3	13.9	5.5	39.3	218	392	194	100	1	294	98	2.61
1989/90	0.4	12.1	8.9	54.3	374	638	266	115	1	381	157	1.49
1990/91*	0.2	10.4	5.9	60.1	358	578	286	120	1	407	171	1.14
1991/92*	0.6	8.7	4.8	50.7	243	489	235	125	2	362	128	1.20
1992/93*	0.5	8.0	4.5	65.6	295	462	230	130	2	362	100	1.25–1.35
	Mil. acres			Bu./acre				Mil. bu.				$/bu.
Soybeans												
1987/88	0	58.2	57.2	33.9	1,938	2,375	7/ 97	1,174	802	2,073	302	5.88
1988/89	0	58.8	57.4	27.0	1,549	1,855	7/ 88	1,058	527	1,673	182	7.42
1989/90	0	60.8	59.5	32.3	1,924	2,108	7/ 100	1,146	623	1,869	239	5.69
1990/91*	0	57.8	56.5	34.1	1,926	2,166	7/ 95	1,187	557	1,839	329	5.74
1991/92*	0	59.2	58.0	34.2	1,987	2,319	7/ 102	1,254	685	2,041	278	5.60
1992/93*	0	59.1	58.1	37.3	2,167	2,447	7/ 102	1,265	740	2,107	340	5.20–5.60
								Mil. lbs.				8/ Cts./lb.
Soybean oil												
1987/88	—	—	—	—	12,974	14,895	—	10,930	1,873	12,803	2,092	22.67
1988/89	—	—	—	—	11,737	13,967	—	10,591	1,661	12,252	1,715	21.10
1989/90	—	—	—	—	13,004	14,741	—	12,083	1,353	13,436	1,305	22.30
1990/91*	—	—	—	—	13,408	14,730	—	12,184	780	12,944	1,786	21.00
1991/92*	—	—	—	—	14,345	16,132	—	12,245	1,648	13,893	2,239	19.10
1992/93*	—	—	—	—	13,934	16,175	—	12,600	1,775	14,375	1,800	19.0–23.0
								1,000 tons				9/ $/ton
Soybean meal												
1987/88	—	—	—	—	28,060	28,300	—	21,293	6,854	28,147	153	239
1988/89	—	—	—	—	24,943	25,100	—	19,657	5,270	24,927	173	252
1989/90	—	—	—	—	27,719	27,900	—	22,263	5,319	27,582	318	186
1990/91*	—	—	—	—	28,325	28,666	—	22,912	5,469	28,381	285	181
1991/92*	—	—	—	—	29,831	30,183	—	23,103	6,850	29,953	230	189
1992/93*	—	—	—	—	29,870	30,250	—	23,950	6,000	29,950	300	165–190

See footnotes at end of table.

Table 17.—Supply & Utilization, continued

	Area											
	Set Aside 3/	Planted	Harvested	Yield	Production	Total supply 4/	Feed and residual	Other domestic use	Exports	Total use	Ending Stocks	Farm price 5/
	Mil. acres			Lb./acre	Mil. bales							
Cotton 10/												
1987/88	4.0	10.4	10.0	706	14.8	19.8	—	7.6	6.6	14.2	5.8	64.30
1988/89	2.2	12.5	11.9	619	15.4	21.2	—	7.8	8.1	13.9	7.1	56.60
1989/90	3.5	10.6	9.5	614	12.2	19.3	—	8.8	7.7	16.5	3.0	66.20
1990/91*	2.0	12.3	11.7	634	15.5	18.5	—	8.7	7.8	16.5	2.3	68.20
1991/92*	1.2	14.1	13.0	652	17.6	20.0	—	9.6	6.7	16.3	3.7	11/ 58.30
1992/93*	1.6	13.4	11.2	696	16.3	20.0	—	9.7	8.0	15.7	4.4	—

*December 10, 1992 Supply & Demand Estimates 1/ Marketing year beginning June 1 for wheat, barley, & oats, August 1 for cotton & rice, September 1 for soybeans, corn, & sorghum, October 1 for soymeal & soyoil. 2/ Conversion factors: Hectare (ha.) = 2.471 acres, 1 metric ton = 2204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, & 4.59 480-pound bales of cotton. 3/ Includes diversion, acreage reduction, 50-92, & 0-92 programs. 0/92 & 50/92 set-aside includes idled acreage & acreage planted to minor oilseeds. Data for 1992/93 are preliminary. 4/ Includes imports. 5/ Marketing-year weighted average price received by farmers. Does not include an allowance for loans outstanding & Government purchases. 6/ Residual included in domestic use. 7/ Includes seed. 8/ Simple average of crude soybean oil, Decatur. 9/ Simple average of 48 percent, Decatur. 10/ Upland & extra long staple. Stocks estimates based on Census Bureau data, resulting in an unaccounted difference between supply & use estimates & changes in ending stocks. 11/ Weighted average for August-March; not a projection for the marketing year. — = not available or not applicable.

Information contact: Commodity Economics Division, Crops Branch (202) 219-0840.

Table 18.—Cash Prices, Selected U.S. Commodities

	Marketing year 1/				1991	1992				
	1988/89	1989/90	1990/91	1991/92	Oct	June	July	Aug	Sept	Oct
Wheat, No. 1 HRW, Kansas City ($/bu.) 2/	4.17	4.22	2.94	3.77	3.64	3.91	3.52	3.27	3.56	3.60
Wheat, DNS, Minneapolis ($/bu.) 3/	4.36	4.16	3.06	3.82	3.68	4.42	4.04	3.65	3.79	3.85
Rice, S.W. La. ($/cwt) 4/	14.85	15.55	15.25	16.48	16.60	15.10	15.20	15.00	14.75	14.70
Corn, no. 2 yellow, 30 day, Chicago ($/bu.)	2.68	2.54	2.41	2.52	2.50	2.59	2.37	2.23	2.17	2.06
Sorghum, no. 2 yellow, Kansas City ($/cwt)	4.17	4.21	4.08	4.36	4.30	4.51	4.05	3.77	3.78	3.60
Barley, feed, Duluth ($/bu.) 5/	2.32	2.20	2.13	2.17	2.18	2.30	2.15	2.03	2.12	2.11
Barley, malting, Minneapolis ($/bu.)	4.11	3.28	2.42	2.38	2.35	2.58	2.59	2.19	2.30	2.39
U.S. price, SLM, 1-1/16 in. (cts./lb.) 6/	57.7	69.8	74.8	56.7	58.3	58.8	60.9	57.6	53.5	49.5
Northern Europe prices index (cts./lb.) 7/	66.4	82.3	82.9	62.9	67.6	64.4	65.2	59.2	56.3	52.9
U.S. M 1-3/32 in. (cts./lb.) 8/	69.2	83.6	88.2	66.3	70.3	67.7	71.3	62.9	60.3	58.0
Soybeans, no. 1 yellow, 30 day, Chicago ($/bu.)	7.41	5.86	5.76	5.75	5.88	6.08	5.65	5.40	5.42	5.33
Soybean oil, crude, Decatur (cts./lb.)	21.10	22.30	21.00	19.13	19.57	20.71	18.82	17.87	18.28	18.36
Soybean meal, 48% protein, Decatur ($/ton) 9/	252.40	186.50	181.40	181.38	196.30	203.90	186.25	186.00	187.00	180.60

1/ Beginning June 1 for wheat & barley; Aug. 1 for rice & cotton; Sept. 1 for corn, sorghum & soybeans; Oct. 1 for soymeal & oil. 2/ Ordinary protein. 3/ 14% protein. 4/ Long grain, milled basis. 5/ Beginning Mar. 1987 reporting point changed from Minneapolis to Duluth. 6/ Average spot market. 7/ Liverpool Cotlook "A" Index; average of five lowest prices of 13 selected growths. 8/ Memphis territory growths. 9/ Note change to 48% protein. NQ = no quotation.

Information contacts: Wheat, rice, & feed grains, Joy Harwood (202) 219-0840; Cotton, Les Meyer (202) 219-0840; Soybeans, Brenda Toland, (202) 219-0840.

Table 19.—Farm Programs, Price Supports, Participation & Payment Rates

	Target price	Basic loan rate	Findley or announced loan rate 1/	Payment rates: Total deficiency	Paid land diversion: Mandatory	Paid land diversion: Optional	Effective base acres 2/	Program 3/	Participation rate 4/
				$/bu.			Mil. acres	Percent of base	Percent of base
Wheat									
1987/88	4.38	2.85	2.28	1.81	—	—	87.6	27.5/0/0	88
1988/89	4.23	2.76	2.21	0.89	—	—	84.8	27.5/0/0	86
1989/90	4.10	2.58	2.06	0.32	—	—	82.3	10/0/0	78
1990/91 5/	4.00	2.44	1.95	1.28	—	—	80.5	8/ 5/0/0	83
1991/92	4.00	2.52	2.04	*1.35	—	—	79.2	15/0/0	85
1992/93	4.00	2.58	2.21	**0.65	—	—	79.0	5/0/0	82
1993/94	4.00	2.88	2.45	—	—	—	—	0/0/0	—
				$/cwt					
Rice									
1987/88	11.66	6.84	7/ 5.79	4.82	—	—	4.2	35/0/0	96
1988/89	11.15	6.63	7/ 6.21	4.31	—	—	4.2	25/0/0	94
1989/90	10.80	6.50	7/ 5.74	3.56	—	—	4.2	25/0/0	94
1990/91 5/	10.71	6.50	7/ 5.94	4.16	—	—	4.2	20/0/0	94
1991/92	10.71	6.50	7/ 5.85	3.07	—	—	4.2	5/0/0	95
1992/93	10.71	6.50	—	**3.51	—	—	4.1	0/0/0	97
1993/94	10.71	6.50	—	—	—	—	—	0/0/0	—
				$/bu.					
Corn									
1987/88	3.03	2.28	1.82	1.09	—	2.00	81.5	20/0/15	90
1988/89	2.93	2.21	1.77	0.36	—	1.75	82.9	20/0/10	87
1989/90	2.84	2.06	1.65	0.58	—	—	82.7	10/0/0	79
1990/91 5/	2.75	1.96	1.57	0.51	—	—	82.6	10/0/0	78
1991/92	2.75	1.89	1.62	0.41	—	—	82.7	7.5/0/0	77
1992/93	2.75	2.01	1.72	**0.48	—	—	82.2	5/0/0	75
1993/94	2.75	1.99	1.72	—	—	—	—	10/0/0	—
				$/bu.					
Sorghum									
1987/88	2.68	2.17	1.74	1.14	—	1.90	17.4	8/ 20/0/15	84
1988/89	2.78	2.10	1.68	0.48	—	1.65	16.8	20/0/10	82
1989/90	2.70	1.96	1.57	0.66	—	—	16.2	10/0/0	71
1990/91 5/	2.61	1.86	1.49	0.56	—	—	15.4	10/0/0	70
1991/92	2.61	1.80	1.54	0.37	—	—	13.5	7.5/0/0	77
1992/93	2.61	1.91	1.63	**0.46	—	—	13.6	5/0/0	77
1993/94	2.61	1.89	1.63	—	—	—	—	5/0/0	—
				$/bu.					
Barley									
1987/88	2.60	1.86	1.49	0.79	—	1.60	12.5	8/ 20/0/15	85
1988/89	2.51	1.80	1.44	0.00	—	1.40	12.5	20/0/10	79
1989/90	2.44	1.68	1.34	0.00	—	—	12.3	10/0/0	67
1990/91 5/	2.36	1.60	1.28	0.20	—	—	11.9	10/0/0	68
1991/92	2.36	1.54	1.32	0.62	—	—	11.5	7.5/0/0	76
1992/93	2.36	1.64	1.40	**0.35	—	—	11.1	5/0/0	74
1993/94	2.36	1.62	1.40	—	—	—	—	0/0/0	—
				$/bu.					
Oats									
1987/88	1.60	1.17	0.94	0.20	—	0.80	8.4	8/ 20/0/15	45
1988/89	1.55	1.14	0.91	0.00	—	—	7.9	5/0/0	30
1989/90	1.50	1.06	0.85	0.00	—	—	7.6	5/0/0	18
1990/91 5/	1.45	1.01	0.81	0.32	—	—	7.5	5/0/0	09
1991/92	1.45	0.97	0.83	0.35	—	—	7.3	0/0/0	38
1992/93	1.45	1.03	0.88	**0.15	—	—	7.3	0/0/0	40
1993/94	1.45	1.02	0.88	—	—	—	—	0/0/0	—
				$/bu.					
Soybeans 9/									
1987/88	—	—	4.77	—	—	—	—	—	—
1988/89	—	—	4.77	—	—	—	—	—	—
1989/90	—	—	4.53	—	—	—	—	10/ 10/25	—
1990/91 5/	—	—	4.50	—	—	—	—	10/ 0/25	—
1991/92	—	—	5.02	—	—	—	—	10/ 0/25	—
1992/93	—	—	5.02	—	—	—	—	10/ 0/25	—
				Cts./lb.					
Upland cotton									
1987/88	79.4	52.25	11/ 52.25	17.3	—	—	14.5	25/0/0	93
1988/89	75.9	51.80	11/ 51.80	19.4	—	—	14.5	12.5/0/0	89
1989/90	73.4	50.00	11/ 50.00	13.1	—	—	14.6	25/0/0	89
1990/91 5/	72.9	50.27	11/ 50.27	7.3	—	—	14.4	12.5/0/0	86
1991/92 12/	72.9	50.77	11/ 47.23	10.1	—	—	14.6	5/0/0	84
1992/93	72.9	52.35	11/ —	**15.0	—	—	14.9	10/0/0	87
1993/94	72.9	52.35	11/ —	—	—	—	—	7.5/0/0	—

1/ There are no Findley loan rates for rice or cotton. See footnotes 7/ & 11/. 2/ National effective crop acreage base as determined by ASCS. Net of CRP. 3/ Program requirements for participating producers (mandatory acreage reduction program/mandatory paid land diversion/optional paid land diversion). Acres idled must be devoted to a conserving use to receive program benefits. 4/ Percentage of effective base acres enrolled in acreage reduction programs. 5/ Payments & loans were reduced by 1.4 percent in 1990/91 due to Gramm-Rudman-Hollings. Budget Reconciliation Act reductions to deficiency payments rates were also in effect in that year. Data do not include these reductions. 6/ Under 1990 modified contracts, participating producers plant up to 105 percent of their wheat base acres. For every acre planted above 95 percent of base, the acreage used to compute deficiency payments was cut by 1 acre. 7/ A marketing loan has been in effect for rice since 1985/86. Loans may be repaid at the lower of: a) the loan rate or b) the adjusted world market price (announced weekly). However, loans cannot be repaid at less than a specified fraction of the loan rate. Data refer to annual average loan repayment rates. 8/ The sorghum, oats, & barley programs are the same as for corn except as indicated. 9/ There are no target prices, base acres, acreage reduction programs, or deficiency payment rates for soybeans. 10/ Nominal percentage of program crop base acres permitted to shift into soybeans without loss of base. 11/ A marketing loan has been in effect for cotton since 1986/87. In 1987/88 & after, loans may be repaid at the lower of: a) the loan rate or b) the adjusted world market price (announced weekly; Plan B). Starting in 1991/92, loans cannot be repaid at less than 70 percent of the loan rate. Data refer to annual average loan repayment rates. 12/ A marketing certificate program was implemented on Aug. 1, 1991. — = not available.

* For wheat, the 1991/92 rate is the total deficiency payment rate for the "regular" program. For the winter wheat option, the rate is $1.25.
** Estimated total deficiency payment rate. Minimum guaranteed payment rate for 0/92 (wheat & feed grains) & 50/92 (rice and upland cotton) programs.

Information contact: Joy Harwood (202) 219-0840.

Table 20.—Fruit

	1983	1984	1985	1986	1987	1988	1989	1990	1991 P
Citrus 1/									
Production (1,000 ton)	13,682	10,832	10,525	11,058	11,993	12,761	13,188	10,860	11,285
Per capita consumpt. (lbs.) 2/	28.0	22.6	21.6	24.3	24.0	25.4	25.1	22.1	19.9
Noncitrus 3/									
Production (1,000 tons)	14,168	14,301	14,191	13,874	16,011	15,893	16,365	15,656	15,821
Per capita consumpt. (lbs.) 2/	62.6	66.3	65.3	68.8	73.6	72.0	73.8	70.5	70.7

	1992								
	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
F.o.b. shipping point prices									
Apples ($/carton) 4/	21.13	15.00	15.00	15.13	15.50	16.56	25.70	16.73	15.38
Pears ($/box) 5/	21.25	13.50	13.68	18.13	15.10	14.30	—	—	13.05
Grower prices									
Oranges ($/box) 6/	6.30	7.39	6.44	6.50	4.75	2.06	1.65	1.37	1.79
Grapefruit ($/box) 6/	6.35	7.15	6.68	4.23	4.45	4.00	3.32	3.73	7.09
Stocks, ending									
Fresh apples (mil. lbs.)	2,315.4	1,623.1	1,073.3	672.9	327.1	106.5	33.5	3,479.5	5,580.0
Fresh pears (mil. lbs.)	152.7	93.6	57.0	18.7	4.7	49.4	139.1	523.1	380.4
Frozen fruits (mil. lbs.)	741.8	634.1	582.0	613.7	668.1	803.1	881.0	935.3	1,073.5
Frozen orange juice (mil. lbs.)	1,149.7	1,102.6	1,269.3	1,306.2	1,133.4	978.0	874.9	742.0	666.2

1/ 1991 indicated 1990/91 season. 2/ Fresh per capita consumption. 3/ Calendar year. 4/ Red delicious, Washington, extra fancy, carton tray pack, 125's. 5/ D'Anjou, Washington, standard box wrapped, U.S. no. 1, 135's. 6/ U.S. equivalent on-tree returns. P = preliminary. — = not available.

Information contact: Wynnice Napper (202) 219-0884.

Table 21.—Vegetables

	Calendar year									
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992p
Production										
Total vegetables (1,000 cwt)	403,509	456,334	453,030	448,629	478,381	468,779	542,437	581,704	564,300	—
Fresh (1,000 cwt) 1/ 3/	185,782	201,817	203,549	203,165	220,539	228,397	239,281	239,104	229,007	—
Processed (ton#) 2/ 3/	10,886,350	12,725,880	12,474,040	12,273,200	12,892,100	12,019,110	15,157,790	16,130,020	16,764,670	—
Mushrooms (1,000 lbs.) 4/	561,531	595,881	587,956	614,393	631,819	667,759	714,992	749,151	738,832	—
Potatoes (1,000 cwt)	333,726	362,039	406,609	351,743	389,320	356,438	370,444	402,110	417,622	411,161
Sweetpotatoes (1,000 cwt)	12,083	12,902	14,573	12,368	11,611	10,945	11,358	12,594	11,203	—
Dry edible beans (1,000 cwt)	15,520	21,070	22,298	22,960	26,031	19,253	23,729	32,379	32,963	22,035

	1992									
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Shipments										
Fresh (1,000 cwt) 5/	22,759	17,429	17,527	26,955	25,050	29,058	25,358	15,613	18,112	14,931
Potatoes (1,000 cwt)	14,747	12,213	14,325	22,793	14,643	11,768	10,946	9,418	13,306	11,363
Sweetpotatoes (1,000 cwt)	301	295	247	387	176	184	246	130	346	359

1/ Includes fresh production of asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, honeydews, onions, & tomatoes. 2/ Includes processing production of snap beans, sweet corn, green peas, tomatoes, cucumbers (for pickles), asparagus, broccoli, carrots, & cauliflower. 3/ Asparagus & cucumber estimates were not available for 1982 & 1983. 4/ Fresh & processing agaricus mushrooms only. Excludes specialty varieties. Crop year July 1 – June 30. 5/ Includes snap beans, broccoli, cabbage, carrots, cauliflower, celery, sweet corn, cucumbers, eggplant, lettuce, onions, bell peppers, squash, tomatoes, cantaloupes, honeydews, & watermelons. p = preliminary.

Information contacts: Gary Lucier or Cathy Greene (202) 219-0884.

Table 22.—Other Commodities

	Annual					1991		1992		
	1987	1988	1989	1990	1991	July-Sept	Oct-Dec	Jan-Mar	Apr-June	July-Sept
Sugar										
Production 1/	7,309	7,087	6,841	6,335	7,145	647	3,667	2,138	733	741
Deliveries 1/	8,167	8,188	8,340	8,661	8,696	2,340	2,234	2,007	2,218	2,433
Stocks, ending 1/	3,195	3,132	2,947	2,729	3,039	1,513	3,039	3,625	2,761	1,358
Coffee										
Composite green price N.Y. (cts./lb.)	109.14	119.59	95.17	76.93	70.09	68.18	64.84	59.19	51.72	48.36
Imports, green bean equiv. (mil. lbs.) 2/	2,638	2,072	2,630	2,714	2,572	562	899	840	720	704

	Annual			1991	1992					
	1989	1990	1991	Aug	Mar	Apr	May	June	July	Aug
Tobacco										
Prices at auctions 3/										
Flue-cured ($/lb.)	167.4	167.3	172.3	166.5	—	—	—	—	155.0	160.0
Burley ($/lb.)	167.2	175.3	178.8	—	—	—	—	—	—	—
Domestic consumption 4/										
Cigarettes (bil.)	540.0	523.1	516.3	42.3	48.5	43.6	39.0	51.7	38.3	—
Large cigars (mil.)	2,467.6	2,343.5	2,231.9	205.8	181.1	161.7	165.1	217.2	166.2	—

1/ 1,000 short tons, raw value. Quarterly data shown at end of each quarter. 2/ Net imports of green & processed coffee. 3/ Crop year July-June for flue-cured, Oct.-Sept. for burley. 4/ Taxable removals. — = not available.

Information contacts: sugar, Peter Buzzanell (202) 219-0888, coffee, Fred Gray (202) 219-0888, tobacco, Verner Grise (202) 219-0890.

World Agriculture

Table 23.—World Supply & Utilization of Major Crops, Livestock & Products

	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92 P	1992/93 F
				Million units			
Wheat							
Area (hectares)	228.1	219.7	217.4	225.8	231.4	221.1	221.0
Production (metric tons)	524.1	495.7	495.0	532.9	588.1	542.2	555.2
Exports (metric tons) 1/	90.7	107.1	97.9	97.0	94.5	108.2	102.7
Consumption (metric tons) 2/	515.9	524.9	525.4	529.9	565.3	554.6	550.3
Ending stocks (metric tons) 3/	177.6	148.4	118.0	120.9	143.8	131.4	136.3
Coarse grains							
Area (hectares)	335.3	323.1	323.3	320.8	313.8	319.2	319.6
Production (metric tons)	822.2	783.9	721.1	792.5	819.9	801.0	838.4
Exports (metric tons) 1/	83.4	84.0	96.1	102.1	87.9	93.8	91.0
Consumption (metric tons) 2/	796.0	805.0	785.5	817.4	807.1	805.5	820.8
Ending stocks (metric tons) 3/	235.6	214.4	150.0	125.0	138.0	133.5	151.3
Rice, milled							
Area (hectares)	145.1	141.7	145.4	146.7	147.1	145.5	147.1
Production (metric tons)	316.7	314.5	330.0	342.6	351.2	348.2	351.1
Exports (metric tons) 4/	12.9	11.9	15.1	12.1	12.7	14.5	14.2
Consumption (metric tons) 2/	320.7	320.0	327.8	335.8	345.9	352.0	354.1
Ending stocks (metric tons) 3/	51.4	45.9	48.3	55.1	60.4	56.6	53.6
Total grains							
Area (hectares)	708.5	684.5	686.1	693.3	692.3	685.8	687.7
Production (metric tons)	1,663.0	1,594.1	1,546.1	1,668.0	1,759.2	1,691.4	1,744.7
Exports (metric tons) 1/	187.0	203.0	209.1	211.2	195.1	216.3	207.9
Consumption (metric tons) 2/	1,632.6	1,649.9	1,638.5	1,683.1	1,718.3	1,712.1	1,725.0
Ending stocks (metric tons) 3/	464.6	408.7	316.3	301.0	342.2	321.5	341.2
Oilseeds							
Crush (metric tons)	161.8	168.4	164.5	172.0	177.4	184.8	184.7
Production (metric tons)	194.9	210.5	201.7	212.5	215.9	223.1	224.2
Exports (metric tons)	37.7	39.5	31.5	35.5	33.0	36.7	37.0
Ending stocks (metric tons)	23.3	24.0	22.1	23.3	22.8	21.2	22.1
Meals							
Production (metric tons)	110.7	115.4	111.3	117.1	119.8	124.9	125.2
Exports (metric tons)	36.7	35.8	37.4	38.5	39.5	41.5	39.6
Oils							
Production (metric tons)	50.4	53.3	53.3	57.2	58.2	60.2	60.7
Exports (metric tons)	16.9	17.5	18.1	19.8	20.3	20.0	20.1
Cotton							
Area (hectares)	29.2	30.8	33.7	31.5	33.0	34.8	32.8
Production (bales)	70.6	81.1	84.4	79.8	87.0	96.0	85.9
Exports (bales)	25.9	23.1	25.8	23.9	22.9	22.4	22.4
Consumption (bales)	82.8	84.1	85.3	86.7	85.4	85.0	85.9
Ending stocks (bales)	35.7	32.8	31.9	26.3	28.7	40.1	40.0
	1987	1988	1989	1990	1991	1992 P	1993 F
				Million			
Red meat							
Production (metric tons)	112.8	118.5	117.9	120.0	119.1	118.8	—
Consumption (metric tons)	110.8	114.5	116.5	117.8	117.1	117.3	—
Exports (metric tons) 1/	6.7	7.1	7.2	7.3	7.7	7.7	—
Poultry 5/							
Production (metric tons)	31.3	32.7	34.0	35.8	37.8	39.4	—
Consumption (metric tons)	30.8	31.9	33.1	34.8	37.0	38.7	—
Exports (metric tons) 1/	1.5	1.8	1.8	2.0	2.1	2.3	—
Dairy							
Milk production (metric tons)	425.7	428.9	434.7	442.0	429.4	415.1	408.0

1/ Excludes intra-EC trade. 2/ Where stocks data not available (excluding USSR), consumption includes stock changes. 3/ Stocks data are based on differing marketing years & do not represent levels at a given date. Data not available for all countries; includes estimated change in USSR grain stocks but not absolute level. 4/ Calendar year data. 1987 data correspond with 1986/87, etc. 5/ Poultry excludes the Peoples Republic of China before 1986
P = preliminary. F = forecast — = not available.

Information contacts: Crops, Carol Whitton (202) 219-0824; red meat & poultry, Linda Bailey (202) 219-1285; dairy, Sara Short (202) 219-0770.

U.S. Agricultural Trade

Table 24.—Prices of Principal U.S. Agricultural Trade Products

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June	July	Aug	Sept	Oct
Export commodities										
Wheat, f.o.b. vessel, Gulf ports ($/bu.)	4.65	3.72	3.52	4.09	4.09	4.04	3.72	3.50	3.79	3.85
Corn, f.o.b. vessel, Gulf ports ($/bu.)	2.85	2.79	2.75	2.74	2.80	2.81	2.61	2.49	2.50	2.42
Grain sorghum, f.o.b. vessel, Gulf ports ($/bu.)	2.70	2.65	2.69	2.70	2.75	2.70	2.42	2.41	2.41	2.33
Soybeans, f.o.b vessel, Gulf ports ($/bu.)	7.06	6.24	6.05	5.97	6.26	6.36	6.01	5.86	5.82	5.67
Soybean oil, Decatur (cts./lb.)	20.21	22.75	20.14	18.52	20.06	20.68	18.73	17.76	18.10	18.31
Soybean meal, Decatur ($/ton)	216.59	189.37	172.90	178.38	183.40	181.36	174.34	174.31	174.33	180.63
Cotton, 7-market avg. spot (cts./lb.)	63.78	71.25	69.69	54.7	55.45	58.82	60.93	57.56	53.49	49.47
Tobacco, avg. price at auction (cts./lb.)	166.81	170.57	179.23	181.93	162.04	162.04	155.02	165.49	182.51	181.93
Rice, f.o.b. mill, Houston ($/cwt)	15.68	15.52	16.46	17.00	17.25	16.63	16.50	16.50	16.50	16.50
Inedible tallow, Chicago (cts./lb.)	14.71	13.54	13.26	13.21	13.75	13.98	14.75	15.42	15.25	15.73
Import commodities										
Coffee, N.Y. spot ($/lb.)	1.04	0.81	0.71	0.59	0.47	0.46	0.44	0.38	0.40	0.49
Rubber, N.Y. spot (cts./lb.)	50.65	46.28	45.73	44.75	46.41	46.57	46.78	47.05	46.86	47.83
Cocoa beans, N.Y. ($/lb.)	0.55	0.55	0.52	0.57	0.42	0.40	0.47	0.50	0.47	0.46

Information contact: Mary Teymourian (202) 219-0824.

Table 25.—Indexes of Real Trade-Weighted Dollar Exchange Rates 1/

	1991	1992									
	Dec	Jan	Feb	Mar	Apr	May	June P	July P	Aug P	Sept P	Oct P	Nov P
					1985 = 100							
Total U.S. trade 2/	62.4	62.4	63.7	68.8	65.0	63.9	59.8	59.6	59.0	58.6	57.1	55.9
Agricultural trade												
U.S. markets	76.3	75.5	76.2	80.7	78.0	76.4	74.6	72.9	71.9	71.1	69.6	68.0
U.S. competitors	76.4	76.2	76.7	80.9	78.5	76.0	72.2	72.9	70.1	69.2	67.4	66.3
Wheat												
U.S. markets	96.8	95.4	95.8	100.9	100.4	98.2	96.2	94.2	93.6	93.0	91.6	90.0
U.S. competitors	69.5	70.0	71.2	86.7	70.9	71.1	69.8	69.6	69.7	70.5	68.6	68.2
Soybeans												
U.S. markets	63.7	63.1	63.7	66.2	65.5	63.6	61.9	61.4	60.8	60.4	59.6	58.5
U.S. competitors	57.4	57.1	57.0	57.7	57.4	56.5	55.8	56.0	55.5	55.1	54.7	54.3
Corn												
U.S. markets	69.4	68.3	69.1	71.1	70.6	67.7	67.7	67.4	67.1	66.8	66.3	65.3
U.S. competitors	60.6	60.2	60.8	61.4	60.6	60.0	57.7	57.3	56.8	56.2	55.4	54.6
Cotton												
U.S. markets	72.3	71.6	72.4	75.8	74.0	72.8	71.5	71.2	71.1	71.0	70.4	69.6
U.S. competitors	97.1	96.1	95.9	95.8	95.3	95.1	87.9	85.6	82.9	80.2	77.2	75.1

1/ Real indexes adjust nominal exchange rates for differences in rates of inflation, to avoid the distortion caused by high-inflation countries. A higher value means the dollar has appreciated. See the October 1988 issue of Agricultural Outlook for a discussion of the calculations and the weights used. 2/ Federal Reserve Board index of trade-weighted value of the U.S. dollar against 10 major currencies. Weights are based on relative importance in world financial markets. P = preliminary.

Information contact: Tim Baxter, (202) 219-0718.

Table 26.—Trade Balance

	Fiscal year 1/								Sept
	1986	1987	1988	1989	1990	1991	1992	1993 F	1992
				$ millio	$ million				
Exports									
Agricultural	26,312	27,876	35,316	39,590	40,220	37,609	42,417	41,500	3,377
Nonagricultural	179,291	202,911	258,656	301,269	326,059	356,682	377,223	—	31,889
Total 2/	205,603	230,787	293,972	340,859	366,279	394,291	419,640	—	35,266
Imports									
Agricultural	20,884	20,650	21,014	21,476	22,560	22,588	24,323	24,000	1,933
Nonagricultural	342,846	367,374	409,138	441,075	458,101	463,720	467,554	—	44,286
Total 3/	363,730	388,024	430,152	462,551	480,661	486,308	511,877	—	46,219
Trade balance									
Agricultural	5,428	7,226	14,302	18,114	17,660	15,021	16,094	17,500	1,444
Nonagricultural	-163,555	-164,463	-150,482	-139,806	-132,042	-107,038	-110,331	—	-12,397
Total	-158,127	-157,237	-136,180	-121,692	-114,382	-92,017	-92,237	—	-10,953

1/ Fiscal years begin October 1 & end September 30. Fiscal year 1992 began Oct. 1, 1991 & ended Sept. 30, 1992. 2/ Domestic exports including Department of Defense shipments (F.A.S. value). 3/ Imports for consumption (customs value). F = forecast. — = not available.

Information contact: Stephen MacDonald (202) 219-0822.

Table 27.—U.S. Agricultural Exports & Imports

	Fiscal year*			Sept	Fiscal year*			Sept
	1991	1992	1993 F	1992	1991	1992	1993 F	1992
	1,000 units				$ million			
EXPORTS								
Animals, live (no.) 1/	1,235	1,476	—	119	546	567	—	43
Meats & preps., excl. poultry (mt)	936	1,108	2/ 1,000	102	2,773	3,236	--	299
Dairy products (mt) 1/	43	172	--	23	293	638	600	74
Poultry meats (mt)	628	795	800	76	737	915	—	80
Fats, oils, & greases (mt)	1,169	1,392	1,400	152	419	498	—	57
Hides & skins incl. furskins	--	--	--	--	1,451	1,337	--	114
Cattle hides, whole (no.) 1/	21,548	20,822	—	1,828	1,191	1,107	—	99
Mink pelts (no.) 1/	3,941	3,160	—	130	74	52	—	2
Grains & feeds (mt)	94,583	100,744	--	8,444	12,175	13,858	3/ 13,400	1,152
Wheat (mt)	26,792	34,287	33,500	2,465	2,867	4,318	4/ 4,500	341
Wheat flour (mt)	987	816	900	45	191	165	--	11
Rice (mt)	2,395	2,279	2,100	226	747	757	700	72
Feed grains, incl. products (mt)	52,353	50,648	48,200	4,668	5,790	5,793	5,200	485
Feeds & fodders (mt)	10,943	11,267	5/ 11,800	920	1,882	2,019	--	170
Other grain products (mt)	1,113	1,449	--	120	697	807	--	72
Fruits, nuts, & preps. (mt)	2,849	3,505	--	273	3,038	3,514	--	314
Fruit juices incl. froz. (1,000 hectoliters) 1/	6,311	7,767	—	633	338	427	--	34
Vegetables & preps. (mt)	2,589	2,703	--	167	2,597	2,790	--	200
Tobacco, unmanufactured (mt)	239	246	—	12	1,533	1,568	1,600	74
Cotton, excl. linters (mt)	1,565	1,494	1,300	58	2,605	2,183	1,800	78
Seeds (mt)	514	701	--	75	617	659	700	60
Sugar, cane or beet (mt)	589	492	—	60	219	154	--	17
Oilseeds & products (mt)	22,295	28,642	—	2,117	5,643	7,156	7,100	529
Oilseeds (mt)	15,615	19,970	--	1,410	3,807	4,743	—	331
Soybeans (mt)	15,139	19,247	19,300	1,363	3,465	4,311	4,100	300
Protein meal (mt)	5,628	7,022	—	553	1,113	1,431	—	109
Vegetable oils (mt)	1,051	1,650	--	154	723	982	--	90
Essential oils (mt)	13	13	—	1	183	184	--	14
Other	92	91	--	9	2,441	2,733	—	235
Total	128,104	142,098	144,000	11,569	37,609	42,417	41,500	3,377
IMPORTS								
Animals, live (no.) 1/	3,168	2,830	—	254	1,131	1,275	1,300	131
Meats & preps., excl. poultry (mt)	1,191	1,134	--	78	3,016	2,684	—	185
Beef & veal (mt)	811	813	900	53	2,025	1,933	2,100	124
Pork (mt)	322	263	260	20	865	625	800	51
Dairy products (mt) 1/	231	232	—	18	767	816	800	71
Poultry & products 1/	—	—	—	—	119	132	—	13
Fats, oils, & greases (mt)	33	46	--	3	19	26	--	2
Hides & skins, incl. furskins 1/	—	—	--	--	153	185	--	13
Wool, unmanufactured (mt)	50	54	—	2	175	167	—	6
Grains & feeds (mt)	4,189	5,446	5,000	388	1,282	1,548	1,500	140
Fruits, nuts, & preps., excl. juices (mt)	5,650	5,883	6,000	391	2,741	2,919	--	190
Bananas & plantains (mt)	3,399	3,626	3,800	292	993	1,083	1,100	88
Fruit juices (1,000 hectoliters) 1/	27,948	26,049	28,000	2,026	737	871	—	57
Vegetables & preps. (mt)	2,416	2,171	--	141	2,183	2,125	2,200	142
Tobacco, unmanufactured (mt)	215	364	180	38	698	1,299	800	131
Cotton, unmanufactured (mt)	18	11	—	1	16	10	--	1
Seeds (mt)	169	174	180	8	173	214	200	12
Nursery stock & cut flowers 1/	—	—	—	—	538	578	--	60
Sugar, cane or beet (mt)	1,785	1,623	—	220	717	633	—	90
Oilseeds & products (mt)	2,077	2,330	—	187	959	1,124	1,200	93
Oilseeds (mt)	445	429	--	23	151	135	--	9
Protein meal (mt)	412	629	—	45	57	84	—	6
Vegetable oils (mt)	1,220	1,273	--	118	750	904	--	78
Beverages excl. fruit juices (1,000 hectoliters) 1/	12,987	13,739	--	1,084	1,858	2,044	—	151
Coffee, tea, cocoa, spices	2,045	2,391	2,320	194	3,294	3,415	—	249
Coffee, incl. products (mt)	1,116	1,330	1,300	101	1,831	1,798	1,800	110
Cocoa beans & products (mt)	700	773	750	67	1,019	1,122	1,200	97
Rubber & allied gums (mt)	792	920	950	75	664	756	800	64
Other	--	—	--	--	1,348	1,503	—	132
Total	--	--	--	--	22,588	24,323	24,000	1,933

*Fiscal years begin Oct. 1 & end Sept. 30. Fiscal year 1992 began Oct. 1, 1991 & ended Sept. 30, 1992. 1/ Not included in total volume and also other dairy products for 1991 & 1992. 2/ Forecasts for footnoted items 2/–6/ are based on slightly different groups of commodities. Fiscal 1991 exports of categories used in the 1991 forecasts were 2/ 676,000 m. tons. 3/ 16,014 million. 4/ 4,426 million l.e. includes flour. 5/ 11,065 million m. tons. 6/ Less than $500. F = forecast. — = not available.

Information contact: Stephen MacDonald (202) 219–0822.

Table 28.—U.S. Agricultural Exports by Region

Region & country	Fiscal year*			Sept	Change from year* earlier			Sept
	1991	1992	1993 F	1992	1991	1992	1993 F	1992
	$ million				Percent			
WESTERN EUROPE	7,312	7,740	7,900	820	-1	6	3	32
European Community (EC-12)	6,776	7,194	7,400	561	-1	6	3	32
Belgium-Luxembourg	464	461	--	60	9	-1	—	89
France	571	618	—	46	22	8	--	8
Germany	1,135	1,091	--	105	2	-4	--	67
Italy	675	684	--	45	-4	1	—	-11
Netherlands	1,561	1,813	--	120	-5	16	—	42
United Kingdom	883	882	—	67	16	0	--	6
Portugal	251	240	--	18	-28	-4	—	109
Spain, Incl. Canary Islands	855	951	—	59	-12	11	--	30
Other Western Europe	536	546	500	60	9	2	0	31
Switzerland	194	187	—	11	13	-4	--	-4
EASTERN EUROPE	306	222	300	40	-36	-28	50	125
Poland	46	49	--	8	-54	6	—	322
Yugoslavia	74	88	--	2	15	-41	--	-35
Romania	82	76	--	21	-61	-8	—	13,962
Former USSR	1,758	2,691	2,100	67	-42	53	-22	-66
ASIA	16,094	17,782	17,100	1,382	-11	10	-4	15
West Asia (Mideast)	1,430	1,770	1,800	146	-28	24	0	-6
Turkey	224	344	--	32	-14	54	—	49
Iraq	0	0	0	0	-100	0	0	0
Israel, Incl. Gaza & W. Bank	287	346	--	19	1	20	--	5
Saudi Arabia	536	549	500	60	7	2	0	-19
South Asia	375	536	--	44	-48	43	—	-26
Bangladesh	87	123	--	20	-44	83	—	5
India	94	117	—	3	-19	24	—	-63
Pakistan	144	226	100	17	-63	57	-50	-25
China	668	691	400	21	-27	3	-43	-62
Japan	7,736	8,383	8,100	651	-5	8	-4	27
Southeast Asia	1,239	1,470	--	114	5	19	--	17
Indonesia	279	353	--	22	1	27	--	94
Philippines	373	443	400	41	6	19	0	-7
Other East Asia	4,646	4,934	5,000	407	-11	8	2	28
Taiwan	1,739	1,916	1,900	150	-4	10	0	27
Korea, Rep.	2,159	2,200	2,300	181	-20	2	5	33
Hong Kong	745	817	800	66	9	10	0	16
AFRICA	1,882	2,304	2,300	285	-6	22	0	68
North Africa	1,386	1,412	1,500	113	-9	2	7	-4
Morocco	129	156	--	21	-21	21	--	6
Algeria	477	478	500	15	-3	0	0	-71
Egypt	692	709	800	67	-9	2	-14	70
Sub-Sahara	496	892	800	172	2	80	-11	230
Nigeria	44	31	--	4	38	-30	--	1
Rep. S. Africa	74	328	—	53	-9	345	—	634
LATIN AMERICA & CARIBBEAN	5,499	6,438	6,700	534	7	17	5	35
Brazil	271	143	100	7	158	-47	0	-61
Caribbean Islands	1,010	970	—	82	0	-4	--	12
Central America	498	587	--	57	8	18	--	42
Colombia	124	142	--	18	-16	14	—	134
Mexico	2,885	3,676	4,100	279	8	27	11	40
Peru	150	179	--	16	-20	19	—	221
Venezuela	307	394	300	44	-11	28	-25	39
CANADA	4,409	4,812	4,700	409	19	9	-2	11
OCEANIA	349	428	400	40	10	23	-0	18
TOTAL	37,609	42,417	41,500	3,377	-6	13	-2	18
Developed countries	20,106	21,969	21,900	1,787	2	9	0	27
Developing countries	16,831	19,756	—	1,567	-14	17	--	13
Other countries	672	693	--	23	-26	3	--	-59

*Fiscal years begin Oct. 1 & end Sept. 30. Fiscal year 1992 began Oct. 1, 1991 & ended Sept. 30, 1992. F = forecast -- = not available.
Note: Adjusted for transshipments through Canada.

Information contact: Stephen MacDonald (202) 219-0822.

Farm Income

Table 29.—Farm Income Statistics

	Calendar year										
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992F	1993 F
	$ billion										
1. Farm receipts	141.9	147.7	150.1	140.0	148.5	158.2	169.2	177.1	174.8	177	172 to 179
Crops (incl. net CCC loans)	67.2	69.9	74.3	63.7	65.9	71.7	76.9	80.0	80.5	84	81 to 86
Livestock	69.6	72.9	69.8	71.6	76.0	79.4	84.1	89.9	86.7	86	83 to 87
Farm related 1/	5.1	4.9	6.0	5.7	6.6	7.1	8.2	7.2	7.6	7	6 to 8
2. Direct Government payments	9.3	8.4	7.7	11.8	16.7	14.5	10.9	9.3	8.2	8	9 to 13
Cash payments	4.1	4.0	7.6	8.1	6.6	7.1	9.1	8.4	8.2	8	9 to 13
Value of PIK commodities	5.2	4.5	0.1	3.7	10.1	7.4	1.7	0.9	0.0	0	0 to 1
3. Gross cash income (1+2) 2/	151.1	156.1	157.9	152.8	165.1	171.7	180.2	186.4	183.2	185	183 to 191
4. Nonmoney income 3/	13.6	5.9	5.6	5.5	5.6	6.1	6.2	6.1	5.9	6	5 to 7
5. Value of inventory change	-10.9	6.0	-2.3	-2.2	-2.3	-3.4	4.8	3.5	0.4	4	-5 to -1
6. Total gross farm income (3+4+5)	153.9	168.0	161.2	156.1	168.5	175.4	191.1	196.0	189.5	195	186 to 195
7. Cash expenses 4/	112.8	118.7	110.7	105.0	109.4	114.6	121.2	125.2	125.2	124	123 to 129
8. Total expenses	139.6	141.9	132.4	125.1	128.8	134.3	141.2	145.1	144.9	144	143 to 149
9. Net cash income (4-7)	38.4	37.4	47.1	47.8	55.8	58.1	58.9	61.3	58.0	60	58 to 64
10. Net farm income (6-8)	14.2	26.1	28.8	31.0	39.7	41.1	49.9	51.0	44.6	51	42 to 48
Deflated (1987$)	16.3	28.7	30.5	32.0	39.7	39.6	46.0	45.1	37.9	42	33 to 39

1/ Income from machine hire, custom work, sales of forest products, & other miscellaneous cash sources. 2/ Numbers in parentheses indicate the combination of items required to calculate a given item. 3/ Value of home consumption of self-produced food & imputed gross rental value of farm dwellings. 4/ Excludes capital consumption, perquisites to hired labor, & farm household expenses. Total may not add because of rounding. F = forecast.

Information contact: Robert McElroy (202) 219-0800.

Table 30.—Balance Sheet of the U.S. Farming Sector

	Calendar year 1/										
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992F	1993 F
	$ billion										
Assets											
Real estate	753.4	661.8	586.2	542.3	578.9	595.5	615.5	627.5	623.4	623	620 to 630
Non-real estate	189.8	195.2	186.5	182.1	193.7	205.4	213.4	219.0	218.5	223	218 to 228
Livestock & poultry	49.5	49.5	46.3	47.8	58.0	62.2	66.2	70.9	68.4	72	71 to 75
Machinery & motor vehicles	85.8	85.0	82.9	81.5	80.0	81.0	84.5	84.3	83.7	83	81 to 85
Crops stored 2/	23.8	28.1	22.9	18.3	17.5	23.3	23.4	22.8	23.8	23	21 to 25
Purchased inputs	—	2.0	1.2	2.1	3.2	3.5	2.6	2.8	2.5	3	2 to 4
Financial assets	30.9	32.6	33.3	34.5	35.1	35.4	36.8	38.3	40.3	42	41 to 45
Total farm assets	943.2	857.0	772.7	724.4	772.6	800.9	828.9	846.5	842.4	846	845 to 855
Liabilities											
Real estate debt 3/	103.2	106.7	100.1	90.4	82.4	77.8	75.4	73.7	74.4	75	73 to 77
Non-real estate debt 4/	87.9	87.1	77.5	66.6	62.0	61.7	61.8	63.1	64.3	65	64 to 68
Total farm debt	191.1	193.8	177.6	157.0	144.4	139.4	137.2	136.8	138.8	140	138 to 144
Total farm equity	752.2	663.3	595.1	567.5	628.2	661.6	691.8	709.8	703.1	707	705 to 715
	Percent										
Selected ratios											
Debt-to-assets	20.3	22.6	23.0	21.7	18.7	17.4	16.6	16.2	16.5	17	16 to 17
Debt-to-equity	25.5	29.2	29.8	27.7	23.0	21.1	19.8	19.3	19.7	20	19 to 21
Debt-to-net cash income	498	518	377	328	259	240	233	223	2,395	2,300	2,200 to 2,400

1/ As of Dec. 31. 2/ Non-CCC crops held on farms plus value above loan rates for crops held under CCC. 3/ Excludes debt on operator dwellings, but includes CCC storage and drying facilities loans. 4/ Excludes debt for nonfarm purposes. F = forecast.

Information contacts: Ken Erickson or Jim Ryan (202) 219-0798.

Table 31.—Cash Receipts From Farm Marketings, by State

Region & State	Livestock & products				Crops 1/				Total 1/			
	1990	1991	Aug 1992	Sept 1992	1990	1991	Aug 1992	Sept 1992	1990	1991	Aug 1992	Sept 1992
						$ million 2/						
NORTH ATLANTIC												
Maine	258	252	20	20	234	192	15	16	493	445	35	37
New Hampshire	63	63	5	5	80	80	8	11	143	143	13	16
Vermont	397	368	34	34	60	66	3	4	456	433	37	38
Massachusetts	125	121	10	9	321	355	30	53	446	476	40	62
Rhode Island	14	13	1	1	58	58	2	12	71	71	3	13
Connecticut	223	209	17	17	250	255	15	25	474	463	31	42
New York	1,971	1,782	160	156	986	1,087	136	208	2,958	2,868	297	364
New Jersey	196	197	17	16	455	464	52	41	650	660	69	57
Pennsylvania	2,714	2,470	230	214	1,043	1,033	73	90	3,757	3,503	304	305
NORTH CENTRAL												
Ohio	1,847	1,681	122	140	2,299	2,212	124	139	4,146	3,893	246	280
Indiana	2,040	1,893	133	137	2,871	2,582	119	93	4,911	4,475	252	231
Illinois	2,452	2,344	192	182	5,338	5,165	315	213	7,789	7,509	507	395
Michigan	1,407	1,288	105	106	1,720	1,793	132	165	3,126	3,081	237	271
Wisconsin	4,573	4,215	386	371	1,161	1,234	139	157	5,734	5,449	525	528
Minnesota	3,749	3,577	287	296	3,135	3,359	328	276	6,885	6,936	615	571
Iowa	5,862	5,721	408	472	4,420	4,458	341	217	10,282	10,179	749	689
Missouri	2,329	2,203	164	187	1,660	1,658	106	130	3,989	3,861	270	318
North Dakota	801	699	36	58	1,730	1,857	184	260	2,532	2,556	220	318
South Dakota	2,294	2,176	119	155	965	1,088	113	128	3,259	3,264	231	284
Nebraska	6,076	5,934	511	482	2,632	2,888	215	240	8,708	8,821	726	722
Kansas	4,996	4,802	476	406	2,024	2,133	147	150	7,020	6,935	623	556
SOUTHERN												
Delaware	460	438	38	34	176	181	20	20	636	620	58	54
Maryland	823	779	87	65	542	554	36	57	1,364	1,332	123	122
Virginia	1,383	1,363	120	143	739	732	63	179	2,122	2,095	182	322
West Virginia	269	253	22	25	70	77	9	13	339	330	30	39
North Carolina	2,658	2,608	239	238	2,268	2,316	358	589	4,926	4,924	597	827
South Carolina	581	549	43	47	588	677	88	111	1,169	1,225	131	158
Georgia	2,270	2,153	184	177	1,596	1,825	157	542	3,866	3,978	341	719
Florida	1,261	1,172	87	104	4,483	4,969	194	193	5,744	6,141	281	297
Kentucky	1,699	1,704	101	160	1,404	1,475	40	36	3,103	3,179	141	196
Tennessee	1,111	1,045	81	82	950	933	39	49	2,061	1,978	120	131
Alabama	2,193	2,219	198	180	632	759	27	161	2,826	2,978	225	341
Mississippi	1,322	1,275	118	117	1,111	1,147	15	46	2,433	2,422	132	164
Arkansas	2,701	2,680	250	233	1,555	1,631	32	201	4,256	4,311	282	433
Louisiana	633	621	62	59	1,296	1,172	36	93	1,929	1,793	98	152
Oklahoma	2,342	2,787	192	179	1,200	1,040	102	80	3,542	3,808	295	258
Texas	7,751	7,914	729	654	4,081	4,212	409	345	11,831	12,126	1,138	999
WESTERN												
Montana	888	790	18	31	766	741	74	89	1,654	1,531	93	120
Idaho	1,137	1,073	95	88	1,748	1,543	117	209	2,885	2,616	212	297
Wyoming	595	643	29	84	159	170	20	10	754	813	49	95
Colorado	3,073	2,664	218	246	1,144	1,097	107	111	4,216	3,761	324	357
New Mexico	1,001	1,019	61	76	482	482	59	43	1,483	1,501	120	119
Arizona	813	786	69	69	1,097	1,104	27	33	1,910	1,890	96	102
Utah	587	553	46	49	175	178	19	17	762	731	65	66
Nevada	209	187	18	14	115	89	6	6	324	276	24	20
Washington	1,396	1,290	116	111	2,402	2,657	243	346	3,798	3,947	359	458
Oregon	753	824	68	81	1,620	1,631	181	244	2,374	2,454	249	325
California	5,533	5,272	416	403	13,624	12,815	1,003	1,336	19,158	17,887	1,419	1,739
Alaska	8	6	1	1	19	20	2	2	27	27	3	2
Hawaii	86	91	8	7	514	506	43	42	600	597	50	49
UNITED STATES	89,923	86,746	7,147	7,223	79,998	80,550	6,122	7,834	169,921	167,292	13,270	15,057

1/ Sales of farm products include receipts from commodities placed under nonrecourse CCC loans; plus additional gains realized on redemptions during the period. 2/ Estimates as of end of current month. Totals may not add because of rounding.

Information contact. Roger Strickland (202) 219–0806.

Table 32.—Cash Receipts From Farming

	Annual						1991	1992				
	1986	1987	1988	1989	1990	1991	Sept	May	June	July	Aug	Sept
							$ million					
Farm marketings & CCC loans*	135.361	141.844	151.102	161.027	169.920	167.292	14669	11.595	11.894	12.780	13.270	15.057
Livestock & products	71.553	75.993	79.438	84.148	89.921	88.745	7089	7.133	6.853	6.723	7.147	7.223
Meat animals	39.081	44.478	46.492	48.857	51.911	51.093	4083	3.998	3.724	3.356	3.878	4.141
Dairy products	17.724	17.727	17.641	19.396	20.210	18.114	1511	1.727	1.701	1.762	1.724	1.645
Poultry & eggs	12.701	11.515	12.868	15.372	15.243	15.063	1276	1.235	1.242	1.229	1.358	1.217
Other	2.048	2.274	2.437	2.524	2.557	2.476	219	173	187	376	187	220
Crops	63.807	65.851	71.663	76.879	79.999	80.547	7580	4.462	5.040	6.057	6.122	7.834
Food grains	5.723	5.790	7.474	8.247	7.612	6.823	734	359	872	1.134	696	836
Feed crops	16.993	14.635	14.298	17.054	18.690	19.012	1480	848	1.184	1.440	1.443	1.341
Cotton (lint & seed)	3.371	4.189	4.546	5.033	5.489	6.568	213	71	68	43	174	218
Tobacco	1.894	1.816	2.083	2.415	2.741	2.866	519	0	0	223	461	704
Oil-bearing crops	10.614	11.283	13.500	11.866	12.294	12.547	1232	576	664	658	696	1.196
Vegetables & melons	8.859	9.898	9.788	11.534	11.455	11.293	1284	1.081	883	867	1.201	1.394
Fruits & tree nuts	7.252	8.085	9.202	9.296	9.534	9.882	1066	485	677	961	744	1.095
Other	9.101	10.176	10.772	11.435	12.284	12.514	1051	1.043	692	731	706	1.052
Government payments	11.813	16.747	14.480	10.887	9.298	8.214	104	729	141	62	57	516
Total	147.174	158.591	165.582	171.914	179.218	175.506	14.773	12.324	12.035	12.862	13.327	15.573

*Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Roger Strickland (202) 219-0806.

Table 33.—Farm Production Expenses

	Calendar year										
	1984	1985	1986	1987	1988	1989	1990	1991	1992F	1993F	
						$ million					
Feed purchased	19.383	16.949	17.472	17.463	20.393	21.002	20.706	19.800	20.000	18.000	to 22.000
Livestock & poultry purchased	9.487	9.184	9.758	11.842	12.764	13.138	14.832	14.358	14.000	12.000	to 16.000
Seed purchased	3.386	3.128	3.188	3.259	3.358	3.558	3.576	3.975	4.000	3.000	to 5.000
Farm-origin inputs	32.256	29.261	30.418	32.564	36.515	37.698	39.114	38.133	38.000	35.000	to 39.000
Fertilizer & lime	8.361	7.513	6.820	6.453	6.947	7.249	7.135	7.419	7.000	5.000	to 9.000
Fuels & oils	7.296	6.436	5.310	4.957	4.903	4.798	5.730	5.472	5.000	4.000	to 7.000
Electricity	2.060	1.878	1.795	2.156	2.289	2.543	2.480	2.483	2.000	2.000	to 4.000
Pesticides	4.688	4.334	4.324	4.512	4.577	5.437	5.730	6.313	6.000	5.000	to 7.000
Manufactured inputs	22.404	20.160	18.249	18.077	18.716	20.027	21.063	21.687	21.000	20.000	to 24.000
Short-term interest	10.396	8.735	7.367	6.767	6.797	6.910	6.911	6.615	6.000	5.000	to 8.000
Real estate interest 1/	10.733	9.878	9.131	8.187	7.885	7.781	7.607	7.319	7.000	6.000	to 8.000
Total interest charges	21.129	18.613	16.498	14.954	14.682	14.691	14.518	13.934	14.000	12.000	to 16.000
Repair & maintenance 1/	6.416	6.370	6.426	6.760	6.858	7.340	7.347	7.234	7.000	7.000	to 9.000
Contract & hired labor	9.427	10.008	9.484	9.975	10.441	11.110	12.541	12.595	12.000	10.000	to 14.000
Machine hire & custom work	2.566	2.354	2.099	2.105	2.354	2.682	2.633	2.722	3.000	2.000	to 4.000
Marketing, storage, & transportation	4.012	4.127	3.652	4.078	3.450	4.080	4.046	4.532	5.000	4.000	to 6.000
Misc. operating expenses 1/ 2/	10.331	10.010	9.759	11.171	11.791	12.522	12.364	13.256	13.000	11.000	to 15.000
Other operating expenses	32.751	32.868	31.420	34.089	34.894	37.734	38.931	40.339	40.000	39.000	to 44.000
Capital consumption 1/	20.847	19.299	17.788	17.092	17.344	17.780	17.494	17.352	18.000	16.000	to 20.000
Taxes 1/	4.337	4.542	4.612	4.853	4.848	5.127	5.623	5.980	6.000	5.000	to 7.000
Net rent to nonoperator landlord	8.150	7.690	8.099	7.124	7.290	8.187	8.334	7.464	8.000	7.000	to 9.000
Other overhead expenses	33.334	31.531	28.499	29.069	29.482	31.094	31.451	30.796	31.000	30.000	to 33.000
Total production expenses	141.873	132.433	125.084	128.772	134.285	141.244	145.077	144.889	144.000	143.000	to 149.000

1/ Includes operator dwellings. 2/ Beginning in 1982, miscellaneous operating expenses include other livestock purchases, dairy assessments & feeding fees paid by nonoperators. Totals may not add because of rounding. F = forecast.

Information contacts: Chris McGath (202) 219-0804, Robert McElroy (202) 219-0800.

Table 34.—CCC Net Outlays by Commodity & Function

	Fiscal year									
	1984	1985	1986	1987	1988	1989	1990	1991	1992 E	1993 E
	$ million									
COMMODITY/PROGRAM										
Feed grains										
Corn	-934	4,403	10,524	12,346	8,227	2,863	2,450	2,387	1,949	4,165
Grain sorghum	76	463	1,185	1,203	764	467	361	243	187	361
Barley	89	336	471	394	57	45	-93	71	174	167
Oats	5	2	26	17	-2	1	-5	12	33	32
Corn & oat products	6	7	5	7	7	8	8	9	9	8
Total feed grains	-758	5,211	12,211	13,967	9,053	3,384	2,721	2,722	2,352	4,733
Wheat	2,536	4,691	3,440	2,836	678	53	806	2,958	1,608	1,751
Rice	333	990	947	906	128	631	667	867	698	736
Upland cotton	244	1,553	2,142	1,786	666	1,461	-79	382	1,271	1,893
Tobacco	346	455	253	-346	-453	-367	-307	-143	-32	38
Dairy	1,502	2,085	2,337	1,166	1,295	679	505	839	199	131
Soybeans	-585	711	1,597	-476	-1,678	-86	5	40	6	-20
Peanuts	1	12	32	8	7	13	1	48	83	35
Sugar	10	184	214	-65	-246	-25	15	-20	-27	-28
Honey	90	81	89	73	100	42	47	19	21	14
Wool	132	109	123	152	1/ 5	93	104	172	182	183
Operating expense 3/	362	346	457	535	614	620	618	625	7	7
Interest expenditure	1,064	1,435	1,411	1,219	425	98	632	745	675	271
Export programs 4/	743	134	102	276	200	-102	-34	733	1,969	1,982
1989/89 Disaster/ livestock assistance	0	0	0	0	0	3,919	2/ 161	121	1,086	0
Other	1,295	-314	486	371	1,665	110	609	2	466	1,368
Total	7,315	17,683	25,841	22,408	12,461	10,523	6,471	10,110	10,564	13,094
FUNCTION										
Price-support loans (net)	-27	6,272	13,628	12,199	4,579	-926	-399	418	541	1,066
Direct payments 5/										
Deficiency	612	6,302	6,186	4,833	3,971	5,798	4,178	6,224	5,118	7,718
Diversion	1,504	1,525	64	382	8	-1	0	0	0	0
Dairy termination	0	0	489	587	260	168	189	96	13	0
Other	0	0	27	60	0	42	3	21	327	419
Disaster	1	0	0	0	6	4	0	0	0	0
Total direct payments	2,117	7,827	6,746	5,862	4,245	6,011	4,370	6,341	5,458	8,137
1988/89 crop disaster	0	0	0	0	0	3,386	2/ 5	6	996	0
Emergency livestock/ forage assistance	0	0	0	0	31	533	156	115	90	0
Purchases (net)	1,470	1,331	1,670	-479	-1,131	116	-48	646	220	199
Producer storage payments	268	329	485	832	658	174	185	1	26	24
Processing, storage, & transportation	639	657	1,013	1,659	1,113	659	317	394	192	128
Operating expense 3/	362	346	457	535	614	620	818	625	7	7
Interest expenditure	1,064	1,435	1,411	1,219	425	98	632	745	675	271
Export programs 4/	743	134	102	276	200	-102	-34	733	1,969	1,982
Other	679	-648	329	305	1,727	-46	669	86	390	1,280
Total	7,315	17,683	25,841	22,408	12,461	10,523	6,471	10,110	10,564	13,094

1/ Fiscal 1988 wool & mohair program outlays were $130,635,000 but include a one-time advance appropriation of $126,108,000, which was recorded as a wool program receipt by Treasury. 2/ Approximately $1.5 billion in benefits to farmers under the Disaster Assistance Act of 1989 were paid in generic certificates & were not recorded directly as disaster assistance outlays. 3/ Does not include CCC Transfers to General Sales Manager. 4/ Includes Export Guarantee Program, Direct Export Credit Program, CCC Transfers to the General Sales Manager, Market Promotion Program, starting in fiscal 1991 & starting in fiscal 1992 Export Guarantee Program – Credit Reform, Export Enhancement Program, & Dairy Export Incentive Program. 5/ Includes cash payments only. Excludes payment-in-kind in fiscal 83-85 & generic certificates in fiscal 86-93. E = Estimated in the fiscal 1993 Mid-Session Review Budget based on June, 1992 supply & demand estimates. Minus (-) indicates a net receipt (excess of repayments or other receipts over gross outlays of funds).

Information contact. Richard Pazdalski (202) 720-5146.

Food Expenditures

Table 35.—Food Expenditures Estimates

	Annual			1992			1992 year-to-date		
	1989	1990	1991	Sept	Oct P	Nov P	Sept	Oct P	Nov P
				$ billion					
Sales 1/									
Off-premise use 2/	274.3	296.7	309.0	25.7	26.7	25.8	234.0	260.7	286.4
Meals & snacks 3/	206.3	218.7	227.0	19.2	20.5	19.2	174.1	194.5	213.7
				1991 $ billion					
Sales 1/									
Off-premise use 2/	299.9	304.2	309.0	25.4	26.4	25.6	232.5	258.9	284.4
Meals & snacks 3/	223.3	226.0	226.9	18.7	20.0	18.7	170.9	190.9	209.6
				Percent change from year earlier ($ bil.)					
Sales 1/									
Off-premise use 2/	7.1	8.2	4.1	5.1	6.2	1.0	3.2	3.5	3.3
Meals & snacks 3/	5.5	6.0	3.8	3.4	7.0	3.8	2.2	2.7	2.8
				Percent change from year earlier (1991 $ bil.)					
Sales 1/									
Off-premise use 2/	0.6	1.4	1.4	3.2	4.1	–0.5	2.8	2.9	2.6
Meals & snacks 3/	0.8	1.2	0.4	1.7	5.3	2.0	0.1	0.6	0.7

1/ Food only (excludes alcoholic beverages). Not seasonally adjusted. 2/ Excludes donations & home production. 3/ Excludes donations, child nutrition subsidies, & meals furnished to employees, patients, & inmates P = preliminary.

NOTE: This table differs from Personal Consumption Expenditures (PCE), table 2, for several reasons: (1) this series includes only food not alcoholic beverages & pet food which are included in PCE; (2) this series is not seasonally adjusted, whereas PCE is seasonally adjusted at annual rates; (3) this series reports sales only, but PCE includes food produced & consumed on farms & food furnished to employees; (4) this series includes all sales of meals & snacks. PCE includes only purchases using personal funds, excluding business travel & entertainment. For a more complete discussion of the differences, see "Developing an Integrated Information System for the Food Sector," Agr.-Econ. Rpt. No. 575, Aug 1987.

Information contact: Alden Manchester (202) 219-0880.

Transportation

Table 36.—Rail Rates; Grain & Fruit-Vegetable Shipments

	Annual			1991	1992					
	1989	1990	1991	Oct	May	June	July	Aug	Sept	Oct
Rail freight rate index 1/ (Dec. 1984=100)										
All products	106.4	107.5	109.3	109.3	110.0	110.0	109.8 P	109.0 P	109.9 P	110.1 P
Farm products	108.4	110.4	111.4	111.2	110.3	110.4	110.3 P	110.2 P	110.2 P	112.1 P
Grain	108.7	110.1	111.2	111.6	110.5	110.5	110.4 P	110.3 P	110.3 P	112.7 P
Food products	103.9	105.4	108.1	108.3	109.4	109.4	109.5 P	109.5 P	108.1 P	108.1 P
Grain shipments										
Rail carloadings (1,000 cars) 2/	28.4	27.6	26.8	29.8	21.1 P	23.7 P	25.8 P	26.2 P	25.8 P	30.8 P
Barge shipments (mil. ton) 3/	3.3	3.8	3.3	3.5	4.1	4.1	4.8	4.6	3.2	2.6
Fresh fruit & vegetable shipments 4/ 5/										
Piggy back (mil. cwt)	2.2	1.8	1.5	1.4	2.3	1.9	1.9	1.2	1.5	1.3
Rail (mil. cwt)	2.6	2.3	2.1	2.3	3.5	3.7	2.1	0.1	1.8	2.0
Truck (mil. cwt)	42.3	41.5	41.9	41.5	55.7	51.2	43.2	38.9	37.5	42.2
Cost of operating trucks hauling produce 4/										
Fleet operation (cts./mile)	123.4	130.5	126.5	124.9	123.8	124.4	124.8	124.7	125.1	125.0

1/ Department of Labor, Bureau of Labor Statistics. 2/ Weekly average; from Association of American Railroads. 3/ Shipments on Illinois & Mississippi waterways, U.S. Corps of Engineers. 4/ Agricultural Marketing Service, USDA. 5/ Preliminary data for 1992. P = preliminary. -- = not available.

Information contact: T.Q. Hutchinson (202) 219-0840.

Indicators of Farm Productivity

Table 37.—Indexes of Farm Production, Input Use & Productivity 1/

	1982	1983	1984	1985	1986	1987	1988	1989	1990 2/	1991 2/
						1977=100				
Farm output	116	96	112	118	111	110	102	114	119	120
All livestock products 3/	107	109	107	110	110	113	116	116	118	119
Meat animals	101	104	101	102	100	102	105	105	104	104
Dairy products	110	114	110	117	118	118	118	117	120	121
Poultry & eggs	119	120	123	128	133	144	148	153	162	168
All crops 4/	117	88	111	118	109	108	92	107	114	111
Feed grains	122	87	116	134	123	106	73	108	112	106
Hay & forage	109	100	107	106	106	102	89	101	102	103
Food grains	138	117	129	121	107	107	98	107	136	104
Sugar crops	96	93	95	97	106	111	105	105	107	112
Cotton	85	55	91	94	69	103	107	86	109	122
Tobacco	104	75	90	81	63	62	72	71	84	87
Oil crops	121	91	106	117	110	108	89	106	107	114
Cropland used for crops	101	88	99	98	94	88	87	90	90	—
Crop production per acre	116	100	112	120	116	123	106	119	127	—
Farm input 5/	98	96	95	91	89	89	87	87	88	—
Farm real estate	102	101	99	97	96	95	94	93	93	—
Mechanical power & machinery	89	88	85	80	77	74	74	73	71	—
Agricultural chemicals	118	102	120	115	109	111	112	119	122	—
Feed, seed, & livestock purchases	107	103	103	102	109	116	111	113	113	—
Farm output per unit of input	119	100	118	129	124	124	116	130	135	—
Output per hour of labor										
Farm 6/	125	99	121	139	139	142	135	147	142	—
Nonfarm 7/	99	102	105	106	108	109	111	112	111	—

1/ For historical data & indexes, see Economic Indicators of the Farm Sector: Production & Efficiency Statistics, 1986, ECIFS 5-6. 2/ Preliminary indexes for 1991 based on Crop Production: 1991 Summary, released in January 1992, & unpublished data from the Agricultural Statistics Board, NASS. 3/ Gross livestock production includes minor livestock products not included in the separate groups shown. It cannot be added to gross crop production to compute farm output. 4/ Gross crop production includes some miscellaneous crops not in the separate groups shown. It cannot be added to gross livestock production to compute farm output. 5/ Includes other items not included in the separate groups shown. 6/ Economic Research Service. 7/ Bureau of Labor Statistics. — = not available.

Information contact: Eldon Ball (202) 219-0432

Food Supply & Use

Table 38.—Per Capita Consumption of Major Food Commodities 1/

Commodity	1984	1985	1986	1987	1988	1989	1990	1991 2/
				Pounds				
Red meats 3/4/5/	123.7	124.9	122.2	117.4	119.5	115.9	112.4	112.0
Beef	73.8	74.6	74.4	69.5	68.6	65.4	63.9	63.1
Veal	1.5	1.5	1.6	1.3	1.1	1.0	0.9	0.8
Lamb & mutton	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1
Pork	47.2	47.7	45.2	45.6	48.8	48.4	46.4	47.0
Poultry 3/4/5/	43.7	45.2	47.1	50.7	51.7	53.6	56.0	58.1
Chicken	35.0	36.1	37.0	39.1	39.3	40.5	42.2	43.9
Turkey	8.7	9.1	10.2	11.6	12.4	13.1	13.8	14.2
Fish & shellfish 4/	14.1	15.0	15.4	16.1	15.1	15.6	15.0	14.8
Eggs 5/	33.0	32.4	32.2	32.2	31.2	29.9	29.6	29.3
Dairy products								
Cheese (excluding cottage) 3/6/	21.5	22.5	23.1	24.1	23.7	23.8	24.7	25.2
American	11.9	12.2	12.1	12.4	11.5	11.0	11.2	11.2
Italian	5.8	6.5	7.0	7.6	8.1	8.5	9.0	9.4
Other cheese 7/	3.9	3.9	4.0	4.1	4.1	4.3	4.6	4.6
Cottage cheese	4.1	4.1	4.1	3.9	3.9	3.6	3.4	3.2
Beverage milks 3/	227.2	229.7	228.6	226.5	222.3	224.3	221.7	221.5
Fluid whole milk 8/	126.8	123.3	116.5	111.9	105.7	97.6	90.4	87.5
Fluid lowfat milk 9/	88.8	93.7	98.6	100.6	100.5	106.5	108.4	110.1
Fluid skim milk	11.6	12.6	13.5	14.0	16.1	20.2	22.9	23.8
Fluid cream products 10/	6.2	6.7	7.0	7.1	7.1	7.3	7.1	7.0
Yogurt (excluding frozen)	3.7	4.1	4.4	4.4	4.7	4.3	4.1	4.3
Ice cream	18.2	18.1	18.4	18.3	17.3	16.1	15.8	16.4
Ice milk	7.0	6.9	7.2	7.4	8.0	8.4	7.7	7.3
Frozen yogurt	—	—	—	—	—	2.0	2.8	3.5
All dairy products, milk equivalent, milkfat basis 11/	581.9	593.7	591.5	601.2	582.8	565.2	570.8	564.7
Fats & oils — Total fat content	58.8	64.3	64.3	62.9	63.0	61.1	62.7	63.8
Butter & margarine (product weight)	15.3	15.7	16.0	15.2	14.8	14.6	15.3	14.6
Shortening	21.3	22.9	22.1	21.4	21.5	21.5	22.2	22.1
Lard & edible tallow (direct use)	3.8	3.7	3.5	2.7	2.6	2.7	3.0	3.1
Salad & cooking oils	19.9	23.5	24.2	25.4	25.8	24.0	24.2	25.2
Fresh fruits 12/	88.9	86.8	93.1	97.5	97.4	98.8	92.6	90.6
Canned fruit 13/	12.3	12.7	12.9	13.6	13.2	13.3	13.4	12.3
Dried fruit	2.6	2.9	2.9	2.7	3.0	3.3	3.2	3.6
Frozen fruit	3.0	3.3	3.6	3.9	3.8	4.6	4.3	3.9
Frozen citrus juices 14/	35.7	40.5	43.2	40.2	40.1	34.3	27.2	—
Vegetables 12/								
Fresh	100.6	100.7	99.3	105.7	109.7	112.9	110.9	106.0
Canning	90.9	87.8	87.9	87.6	83.5	90.7	96.4	94.3
Freezing	17.5	17.1	15.8	16.8	18.3	17.8	18.3	19.3
Potatoes, all 12/	0.0	122.4	125.8	125.8	122.2	127.4	127.9	130.5
Sweetpotatoes 12/	5.4	5.8	4.8	4.8	4.6	4.5	5	4.4
Peanuts (shelled)	6.0	6.3	6.4	6.4	6.9	7.0	6.0	6.4
Tree nuts (shelled)	2.3	2.3	2.3	2.2	2.3	2.3	2.5	2.5
Flour & cereal products 15/	150.4	157.5	163.7	172.5	174.3	174.9	183.0	184.3
Wheat flour	119.2	124.7	125.7	129.9	130.0	129.2	135.7	135.9
Rice (milled basis)	8.5	9.0	11.6	14.0	14.3	15.2	16.2	17.0
Caloric sweeteners 16/	127.0	131.3	129.6	133.7	135.1	136.4	139.1	140.2
Coffee (green bean equiv.)	10.2	10.5	10.5	10.2	9.8	10.3	10.2	10.3
Cocoa (chocolate liquor equiv.)	3.4	3.7	3.8	3.9	3.9	3.9	4.2	—

1/ In pounds, retail weight unless otherwise stated. Consumption normally represents total supply minus exports, nonfood use, & ending stocks. Calendar-year data except fresh citrus fruits, peanuts, tree nuts, & rice, which are on crop-year basis. 2/ Preliminary. 3/ Total may not add due to rounding. 4/ Boneless, trimmed weight. Chicken series revised to exclude amount of ready-to-cook chicken going to pet food as well as some water leakage that occures when chicken is cut up before packaging. 5/ Exlcudes shipments to the U.S. territories. 6/ Natural equivalent of cheese & cheese & other dairy products. Includes miscellaneous cheese not shown separately. 7/ Includes Swiss, Brick, Munster, cream, Neufchatel, Blue, Gorgonzola, Edam, & Gouda. 8/ Plain & flavored. 9/ Plain & flavored & buttermilk. 10/ Heavy cream, light cream, half & half, & sour cream & dip. 11/ Includes condensed & evaporated milk & dry milk products. 12/ Farm weight. 13/ Excludes pineapple & berries. 14/ Single strength equivalent. 15/ Includes rye, corn, oat, & barley products. Excludes quantities used in alcoholic beverages, corn sweeteners, & fuel. 16/ Dry weight equivalent. — not available.

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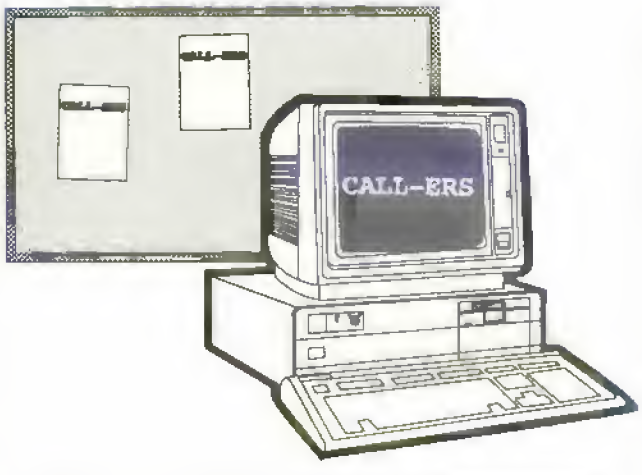

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- *Livestock*: cattle, hogs, broilers, eggs, turkeys, dairy
- *Crops*: wheat, rice, feed grains, oilseeds, cotton, tobacco, sugar, vegetables, fruit

These commodity summaries are included in the "Agricultural Economy" section. Beginning October 1991 this section is "Commodity Overview."

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